FEBRUARY '56

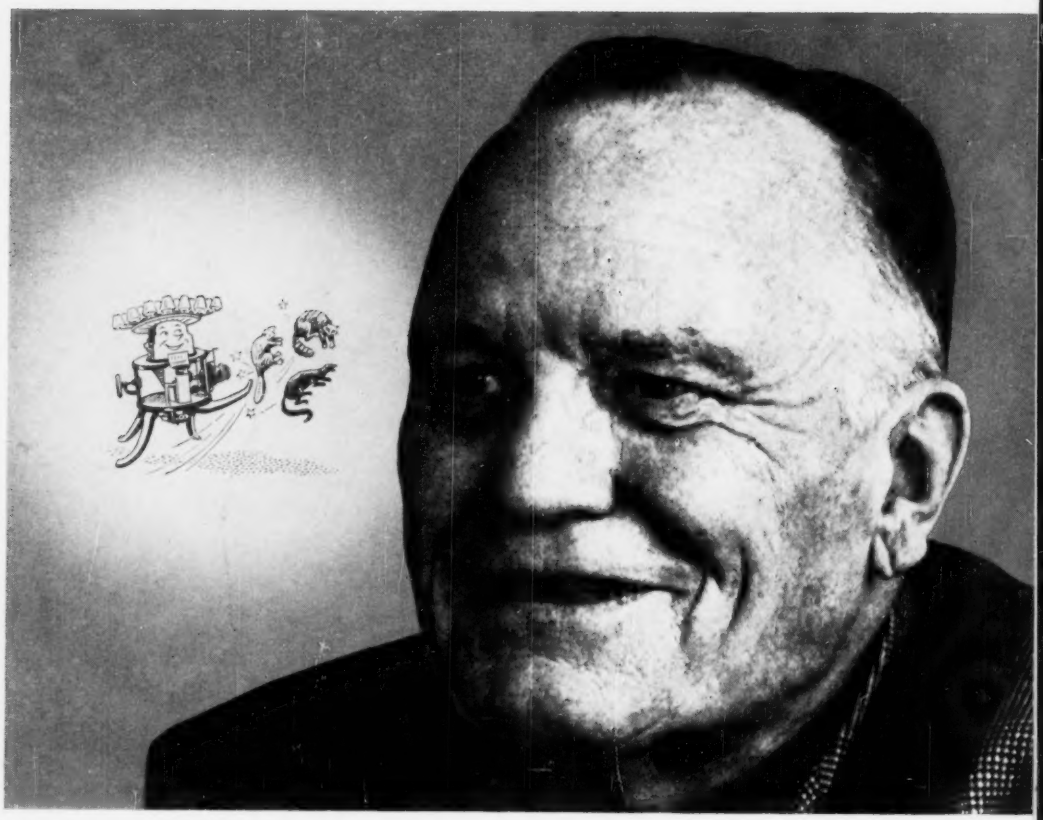
MODERN TEXTILES MAGAZINE

Specializing in Rayon and Synthetic Fibers since 1925

FIBERS

FABRICS

FINISHES



Veteran auto man GEORGE W. BORG grows young again knitting fur-like fabrics.
Story page 31

THIS MONTH'S SPECIAL FEATURES:

Tests for better carding
Textile research gains in '55
Measuring pH in wet processing
Setting up hosiery specifications

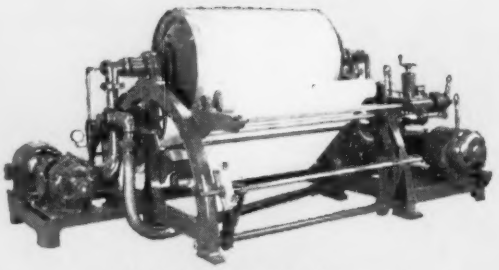
AND 14 MORE TIMELY REPORTS AND USEFUL ARTICLES

FINISHING SCHOOL for FABRICS

Your fabrics finish highest in their class and win quick customer acceptance when they get the finishing touches of beauty added by Van Vlaanderen machines. Long association with the needs of dyers and finishers has given our engineers know-how in designing and manufacturing superior equipment.

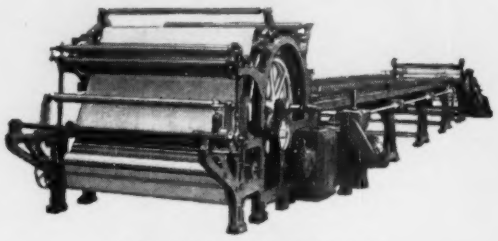
The machines shown below are representative of the full line of Van Vlaanderen equipment for preparing, dyeing and finishing modern fabrics. Ask us for full information.

THE V.V. DECATERS. The better hand, richer color and evener finish given by decating add sales appeal to your fabrics at a cost that scarcely need be considered. Pioneers in building decating machines, Van Vlaanderen offers the standard single pump machine or the dual pump machine (for faster cooling of heavier cloths, resulting in higher production). Your first choice will be a Van Vlaanderen Decater after making comparisons.



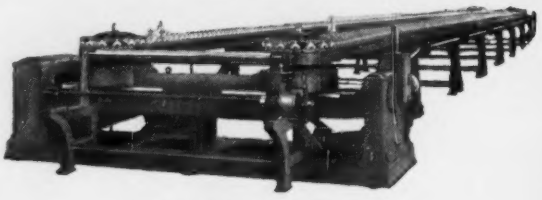
V.V. DUAL PUMP DECATER

The V.V. PALMER-TENTER UNIT provides an advanced range for continuous finishing, chemicising and impregnating rayon, acetate, synthetic and natural fibre broadgoods. It is the ideal combination for delivering the greater production and finer quality necessary today. Built to the Van Vlaanderen standard of rugged dependability. The individual machines are also available separately.



V.V. PALMER-TENTER UNIT

V.V. TENTERING FRAMES are known for quality work and economical operation. Massive ruggedness and advanced engineering give smoother performance, increased machine life and better production. Precision lathe-type beds and heavy cast-iron rails and cross girts are built to resist the severest punishment of thousands of pounds of rapidly moving clips and the high temperatures often used in tentering.



V.V. HEAVY DUTY TENTER

Our engineers are anxious to show you these and other Van Vlaanderen machines.

VAN VLAANDEREN

VAN VLAANDEREN MACHINE COMPANY

370 Straight Street, • Paterson 3, New Jersey

MACHINE COMPANY

In the South — Parrott and Ballentine • 610 South Carolina Bank Building • Greenville, South Carolina
In New England— William E. Stubbins • 211 West Exchange Street • Providence, Rhode Island
WORLD'S LARGEST MANUFACTURER OF MACHINES FOR PROCESSING MODERN FABRICS

Announcing the next step in carpet rayon . . .

HARTFORD'S "KOLORLOK" SOLUTION-DYED FIBER

AFTER EXTENSIVE RESEARCH, Hartford Rayon is now making commercially available a new and better carpet rayon staple fiber, long awaited by the carpet industry.

Its exceptional colorfast qualities will answer many of the basic problems in carpet manufacture. With Hartford's process, the color is introduced right into the fiber itself. The result is a specially engineered carpet fiber with the color locked in.

Working in close cooperation with technical carpet experts, stylists and colorists, Hartford Rayon is producing this special carpet fiber to meet the most exacting standards of the carpet industry.

Here are some of the outstanding selling and promotion benefits this important development brings to the carpet industry.

Consumers are enthusiastic about the exceptional colorfastness to light and sun.

Dealers find a strong selling point in the remarkable fade resistance to wet cleaning, dry cleaning and on-location shampooing.

Salesmen can clinch sales by showing how easily the carpet is spot cleaned with ordinary household chemicals, when children or pets stain the carpet.

Increased sales in coastal regions are anticipated because of the fade resistance to the effects of salt air and sea water. Colors show no measurable change when salt water drips on the carpet.

Room to room uniformity is more satisfactory. The color, locked into the fiber, shows unequalled uniformity in the finished carpet.

Installation problems of end to end and side to center matching are greatly minimized.

Dealer inventory difficulties of roll-to-roll color variations are sharply reduced when the manufacturer uses this carpet fiber with normal spinning and tufting controls.

These outstanding advantages give Hartford's "Kolorlok" carpet rayon a strong sales appeal. In fact, its success is already proven in actual sales—actual use!

Presently available in eight most wanted, decorator colors.

Information concerning Hartford's "Kolorlok" Solution-Dyed Rayon Staple Fiber is available upon request.

HARTFORD RAYON COMPANY

136 Madison Ave., New York 16, N. Y.

MODERN TEXTILES MAGAZINE

February, 1956 Vol. 37, No. 2

Modern Textiles Magazine
Established 1925

* * *

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* Registered U.S. Pat. Office.

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The Principal Trade Groups

Rayon and Acetate Fibers Producers Group ..... Empire State Bldg., New York
National Federation of Textiles, Inc. ..... 389 Fifth Ave., New York
American Association of Textile Chemists and Colorists ..... Lowell Techn. Inst., Lowell, Mass.
American Association for Textile Technology, Inc. ..... 2 Park Ave., New York
Silk and Rayon Printers and Dyers Ass'n of America, Inc. ..... 1450 Broadway, New York
Synthetic Organic Chemical Manufacturers Association ..... 41 E. 42nd St., New York
Textile Distributors Institute, Inc. ..... 469 Seventh Ave., New York
American Rayon Institute ..... 350 Fifth Avenue, New York

Departments

our readers write

Tricot Warping

I have been a reader of your excellent publication for a number of years and found little reason to offer criticism of the editorial matter. However, having read your Tricot Workshop article of September, 1955, I feel that it would be beneficial to the readers if several inaccuracies contained therein were pointed out.

1. American Celanese cannot claim credit for development of the 84" wide beam. These were in use for nearly 150 years since the advent of power driven tricot machines. Until the outbreak of World War II, spool section warps, as now in common use in U. S. mills, were virtually unknown. The reason for the present preference of spool beams is the higher cost of indirect mill warping for 84" beams and the skilled labor required for it. Direct warping of 84" beams requires 2,352 end creels and a huge amount of yarn in stock which restricts utility to major yarn producers. A suitable warping set-up for 84" beams was developed in England by F.N.F. some ten years ago and is marketed under the name of "Cascade Warper".

2. The reason for better quality cloth available from 84" wide beams (warped directly) is its uniform tension and density which cannot always be said about multiple spool beams. Flanges, if properly maintained, do not detract from fabric quality. They certainly have no effect on the operational speed of the machine.

3. The ease of threading is not enhanced by increased width of the warp sheet. On the contrary, too wide warp sheet is more prone to entanglement and damage.

4. With due regard to American Celanese for development of the scanning type stop motion, the credit for pioneering should be granted to British Celanese which constructed similar type photoelectric stop motion some 15 years ago and successfully operated it at their Spondon near Darby plant.

A. REISFELD
Director, Research & Development
Gehring Textiles, Inc.

Fast Piece Dyeing of Webbings, Braids Said to be Practical with Allied Nylon

Piece dyeing of auto safety belts and other types of webbing is practical and economical with Allied Chemical & Dye Corp.'s new "Caprolan tensile-tough nylon", according to George H. Hotte, director of fiber sales and service of the company's National Aniline Division. The greater receptivity to dye penetration of the new nylon combined with special dyeing techniques developed by Allied permit high quality color retention in webbings and braids when piece dyed, Mr. Hotte said. Caprolan's great affinity for dyes also permits dyeing in a shorter time at less cost, he pointed out.

The increasing use of safety belts in autos has underscored nylon's great advantages in this end use. Blended seat belt materials in tests, have not had the great strength and toughness necessary to meet the rigid specifications established by the auto manufacturers and various State Legislatures.

Nylon in safety belts must be dyed in a wide variety of colors to match the highly styled interior color

(Continued on Page 8)

schemes of today's autos. Caprolan, Mr. Hotte noted, has demonstrated in tests a greater receptivity to dyes with corresponding brighter shades than ordinary nylon.

Allied recently began limited production of its "Caprolan *tensile-tough* nylon" heavy yarns which, Mr. Hotte said, are a completely new class of industrial textile yarns. The new materials are being specially packaged for use in industrial applications and mechanical goods where toughness and high impact strength are essential requirements. The yarns will eventually be available in a range from 2,000 to 50,000 total denier.

Run-in procedures on 2,100, 2,500, 5,000, 7,500, 10,000 and 15,000 deniers have been satisfactorily completed, Mr. Hotte said, and high-quality production of these deniers is now in progress. These yarns are being produced on ten-pound parallel packages with nominal twist.

Mr. Hotte stated that Caprolan heavy yarns have a minimum average standard tenacity of 6.5 grams per denier, and will retain 90% of their strength in the wet state. This means, he pointed out, that no matter how the yarn is tested, it will never show an average less than 6.5 grams per denier.

In conveyor belts for heavy duty use Caprolan has shown a valuable "troughing" quality lacking in other fabrics used for this purpose. This "troughing" quality reduces loss caused by the falling out of coal or ore or other material on the belt since the material being carried tends to slip down into the trough.

In addition to auto safety belts and conveyor fabrics, other end uses for which Caprolan has been evaluated are hoses, filter fabrics, industrial slings, webbing, tapes, cords, seine twine, belting and ropes. The new nylon is made by an exclusive process at National Aniline's new Chesterfield plant at Hopewell, Va.

Celanese Offers 6-Pound Acetate Yarn Cone

The Celanese Corp. of America has developed a 6-pound acetate yarn cone, which is said to permit longer runs than are possible with the conventional 4-pound acetate cone. In heavy production, this means marked savings in labor costs in quilling, warping and knitting, according to Celanese.

KEEP IT HOT

you save money

at higher

temperature

with

RAPIDASE®

Continuous high temperature de-sizing has been adopted by virtually every large dyer and finisher in the country. The majority of these use RAPIDASE. One reason is that of all enzyme de-sizing preparations, RAPIDASE is most heat resistant and consequently most suitable for the speedier and more economical de-sizing at higher temperature.

WALLERSTEIN COMPANY, INC., 180 MADISON AVENUE, NEW YORK 16, N. Y.


WHITIN MACHINE WORKS
FOR 125 YEARS
ONE COMPANY WITH ONE PURPOSE
SERVICE TO THE TEXTILE INDUSTRY
1831–1956
PRESERVING an IDEA . . . . . and an IDEAL!
THE IDEA
"To provide the Textile Industry with the best in Goods and Services." This has been our motivating force since 1831 . . . one hundred twenty-five years ago.
THE IDEAL
The preservation of this Idea will continue to be our Ideal . . . as it moves forward with the vital and progressive Textile Industry.
Whitin
Manufacturers of Machinery for all Major Fibres: Opening, Picking, Carding, Combing, Drawing, Roving, Spinning, Twisting, Winding, and for many other processes.
WHITIN MACHINE WORKS
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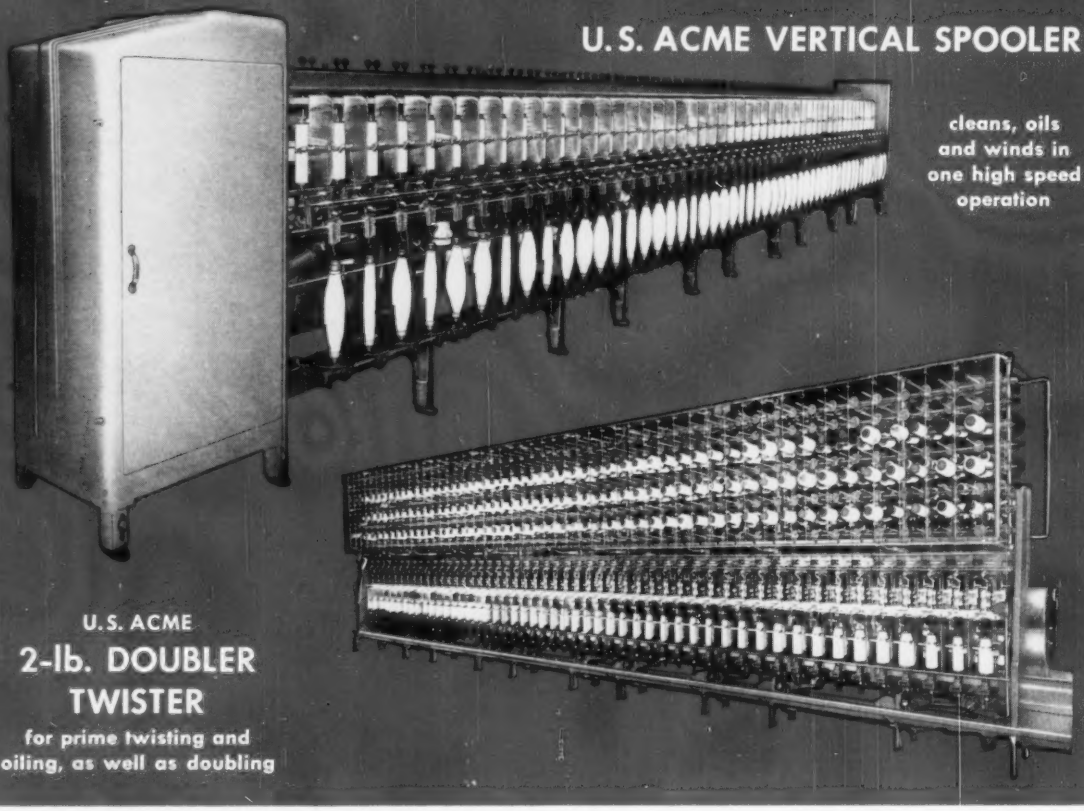
CHARLOTTE, N. C., ATLANTA, GA., SPARTANBURG, S. C., DEXTER, ME.

PLEATED JUMPER SKIRT of nylon, about $6. Blouse of "Dacron" polyester fiber, about $3. Both by Little Alice Stuart for sizes 7-14. Marshall Field, Chicago; Battelstein's, Houston; B. Altman & Co., New York • **ETON SUIT AND CAP** of 55% "Orlon" acrylic fiber, 45% wool, about $13. Sizes 2-4. Shirt of "Dacron" and cotton, about $2. Sizes 2-6. All by Philip Schneider & Co. Filene's, Boston; Carson Pirie Scott, Chicago; Gimbels, New York; The Emporium, San Francisco.

YOU CAN PRODUCE ANY OF THESE PACKAGES

on either of these U.S. Acme machines . . .



U.S. ACME VERTICAL SPOOLER

cleans, oils and winds in one high speed operation

U.S. ACME
2-lb. DOUBLER TWISTER
for prime twisting and oiling, as well as doubling

PACKAGE RESTRICTIONS ARE NO LONGER A PROBLEM . . . now you can produce any of the four types of packages pictured above on either of these U.S. Acme machines! Let market requirements change—when you're equipped with U.S. Acme Vertical Spoolers and/or Doubler Twisters, you're ready to change from one type package to another!

Whether it be

- CONVENTIONAL BOBBINS for twisting . . .
- BOTTLE-BOBBIN PACKAGES for doubling and twisting . . .
- DOUBLE-TAPERED PIRN PACKAGES for fine denier knitting yarns (eliminate coning) . . . or
- DOUBLE-TAPERED PIRNS for fibre glass processing . . .

these U.S. Acme machines are fitted for the job!

Both the Vertical Spooler and Doubler Twister have new, perfected builder motion units that make this yarn package versatility possible.

Write or phone for complete information, let us show you how you can benefit from this flexibility!

THE HOME OF U.S. ACME MODERN THROWING EQUIPMENT

U. S. TEXTILE MACHINE CO. • SCRANTON 8, PA.

PHOTOGRAPH COURTESY OF CONCORDIA MFG. CO., INC.

Here are the reasons why

The SUPERLOFT Stretch Yarn Machine

is the most economical producer of top quality stretch yarn

A 216 spindle SUPERLOFT machine will produce over 400 pounds of stretch yarn a week.

Also, it does this in one single, high speed continuous operation, which assures cleaner, more uniform quality yarn.

This high quality performance is the result of outstanding Leesona-engineered features. For example:

- *Feed rolls are so arranged that one speed setting controls all. The same is true of take-up packages. Once the speeds are set to provide proper tension, that tension can never change — it remains constant from pirn to package and from spindle to spindle throughout the machine.*
- *Temperature of the heating element is controlled with precision accuracy along its entire length, and can be checked by thermometers located at regularintervals.*
- *The false twist spindles, which simultaneously twist and untwist the heated yarn, run at least 30,000 RPM — the equivalent of 60,000 turns per minute on conventional equipment.*
- *Take-up packages are staggered in two decks, enabling spindles to be set 2¾ inches apart in a single deck. This conserves floor space.*
- *The extra-solid UNIRAIL® type construction reduces vibration and assures long service life and low cost maintenance.*

You can buy the SUPERLOFT machine on a royalty-free license agreement, and take advantage of easy financing through either of the two Leesona Pay-As-You-Profit Plans.

Helanca*

High quality stretch yarns from the SUPERLOFT machine more than meet Helanca yarn standards, and, through an arrangement with Heberlein Patent Corporation, users of the machine may procure the right to label their yarns with the well-recognized Helanca name.

See your Universal representative, or write direct for more information.

*REGISTERED TRADE MARK, HEBERLEIN PATENT CORPORATION

23.5.31

UNIVERSAL WINDING COMPANY

P. O. BOX 1605, PROVIDENCE, R. I.

Sales Offices: Boston • Philadelphia • Utica • Charlotte • Atlanta • Los Angeles

Winding and Twisting Machinery for Natural and Synthetic Yarns


The BIG
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NEW

- **BRIGHTER LUSTER**
- **LOWER DYE COSTS**
- **BETTER CRIMP**
- **GREATER RESISTANCE TO ABRASION**
- **GREATER STRENGTH**
- **NEW ECONOMY FOR YOU**
- **MORE RESILIENCY WITH LESS CRUSHABILITY**

SEVEN

Put new life in your product...bring new products to life

A great new fibre capable of giving your product seven unique, highly desirable qualities has been developed. It is the NEW Nylon Staple, produced by IRC.

Put to the test by leading manufacturers, the NEW Nylon Staple has provided dramatic product developments and improvements through these seven great features.

IRC's technical staff stands ready to work with your people—at your plant to put the Big Seven to work for you. Call us.

Nylon Staple I·R·C

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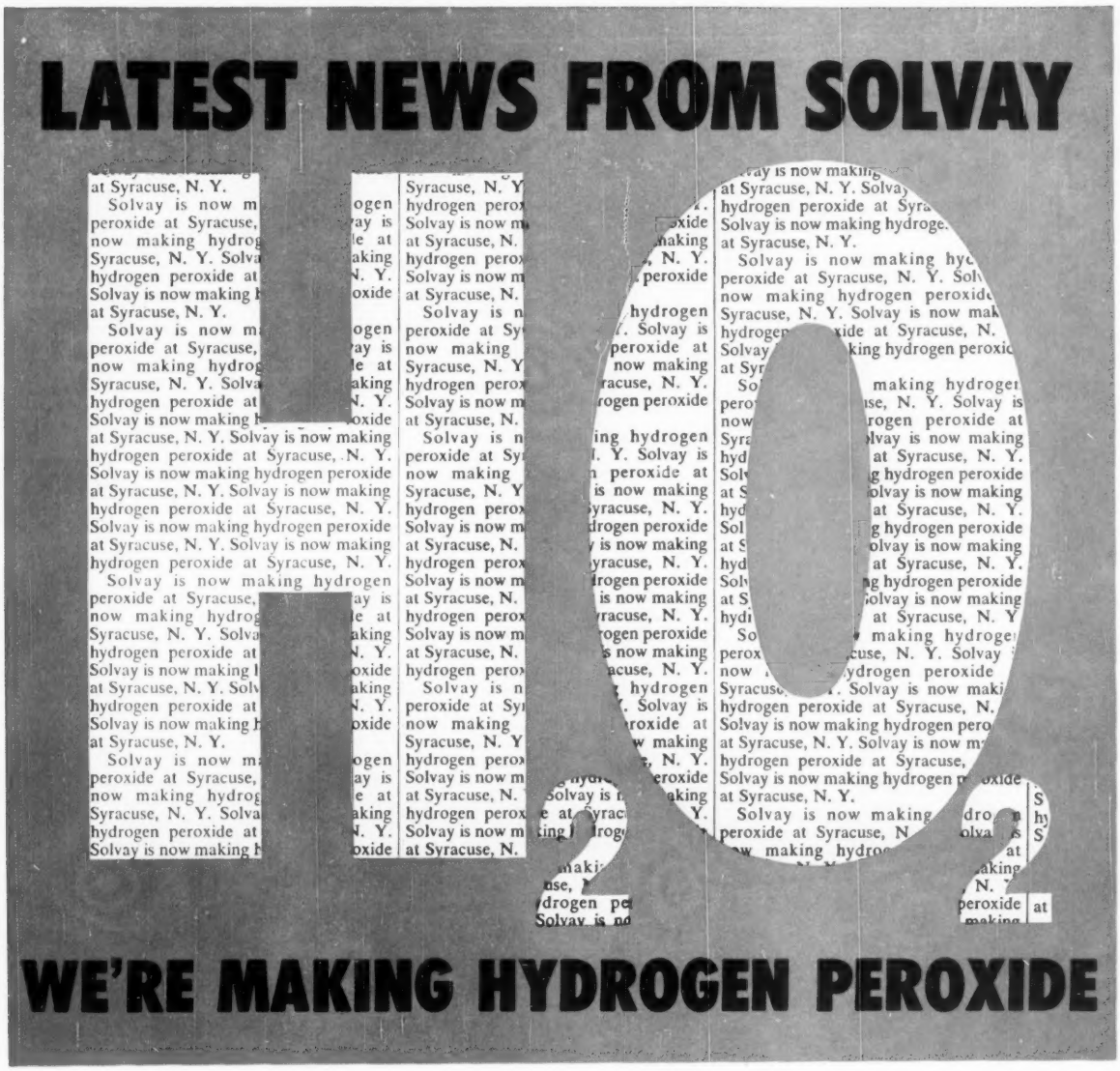

The news that SOLVAY is producing hydrogen peroxide in a new plant at Syracuse, N. Y. is of threefold importance to users of this product.

1. It provides a new dependable source of supply for material of top quality—SOLVAY quality.

2. It means that hydrogen peroxide can be purchased in mixed carload or mixed truckload lots with other SOLVAY products.

3. It makes available, without obligation, SOLVAY's specialized, industry-wise Technical Service.

Hydrogen peroxide, in addition to its many, well-known bleaching applications in industry, is important in such newer uses as in the manufacture of organic chemicals through epoxidation and hydroxylation reactions.

Put SOLVAY Hydrogen Peroxide to work in your products or processes. Now available in both 35% and 50% grades, you can get it in both drums and tank cars—shipped in carloads or truckloads, straight or mixed, as well as l.c.l. Write for further details on prices, general information and technical data.

AMERICA'S FIRST PRODUCER OF ALKALIES
SOLVAY
75th YEAR 1881-1956

Soda Ash • Snowflake® Crystals • Chlorine
Potassium Carbonate • Calcium Chloride
Sodium Bicarbonate • Ammonium Chloride
Ammonium Bicarbonate • Caustic Potash • Chloroform
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Cleaning Compounds • Methylene Chloride • Monochlorobenzene
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SOLVAY PROCESS DIVISION
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BRANCH SALES OFFICES:
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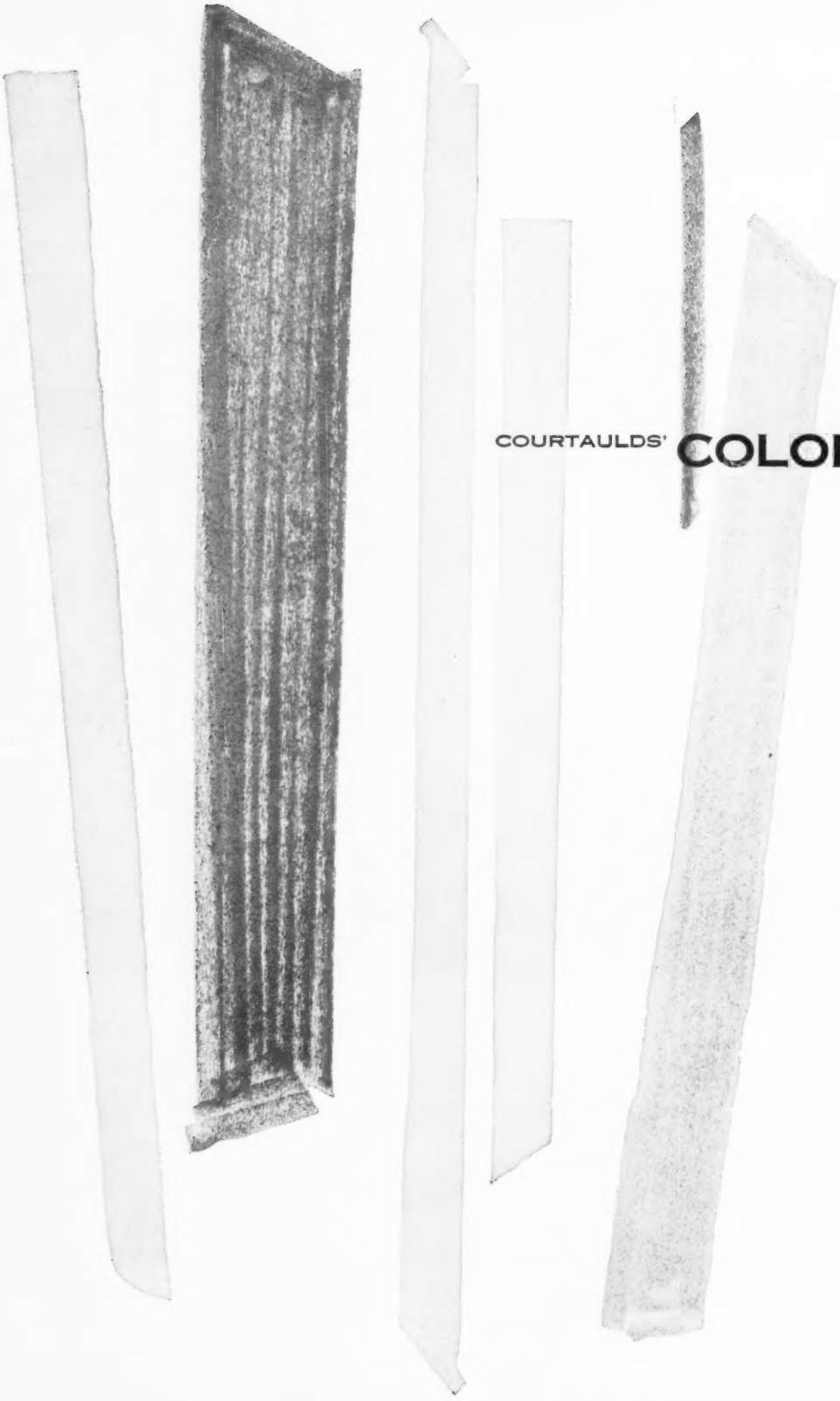


COURTAULDS' **COLORAY**

8 Coloray colors resist fading—
even after 500 test hours
in direct tropical sunlight...

and there's no rating high enough
to describe so much colorfastness!

BREAKS THE *colorfastness* BARRIER!

No other range of textile colors—anytime—anywhere—have been known to come close to Coloray's remarkable performance in blazing South Florida sunlight.

After 500 hours of exposure—still no effect on Coloray turquoise, peacock blue, terra cotta, tan, medium brown, silver grey, slate grey and black. Other "colorfast" colors claim *superior* light-fastness after only 80 hours of sun exposure without fading. And here is light-fastness over 6 times better!

That's typical of the phenomenal fastness of all 19 Coloray colors . . . a range that rockets safely into the 160, 320 and now 500-hour exposures. The sound reason for these spectacular results is: Coloray colors are not superficially dyed, but solution-dyed. Meaning the color is caged inside the fiber as the fiber forms! That's why Coloray colors have a deep-down beauty that adds dollars to the appearance of merchandise.

That's why you can count on Coloray colors to break the *sales* barrier in *your* business!

Results of Tests on Coloray Conducted by South Florida Test Service

Color	Hours of Exposure (Under Glass)	Ratings*	Hours of Exposure (Direct Weathering)	Ratings*
Black	500	*	500	*
Slate Grey	500	*	500	*
Silver Grey	500	*	500	*
Tan	500	*	500	*
Peacock Blue	500	*	500	*
Turquoise	500	*	500	*
Terra Cotta	500	*	500	*
Medium Brown	500	*	500	*
Hunter Green	320	L8	320	L8
Dark Blue	320	L8	160	L7

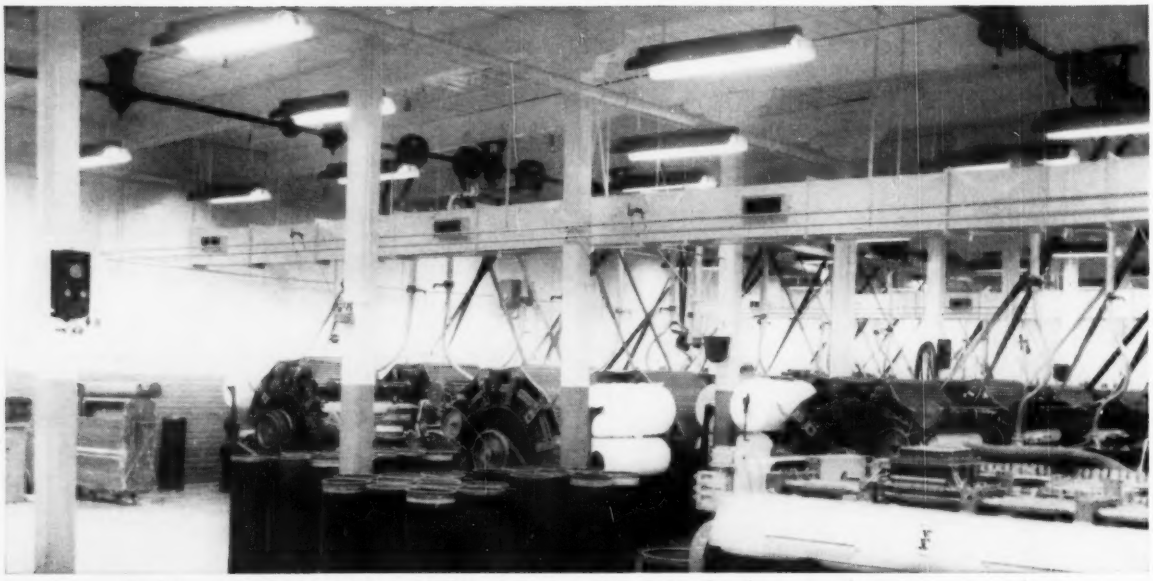
Color	Hours of Exposure (Under Glass)	Ratings*	Hours of Exposure (Direct Weathering)	Ratings*
Malachite Green	320	L8	160	L7
Indian Yellow	320	L8	160	L7
Red	320	L8	160	L7
Dark Brown	160	L7	160	L7
Sulphur Yellow	160	L7	160	L7
Medium Blue	160	L7	80	L6
Apple Green	160	L7	80	L6
Pink	160	L7	80	L6
Light Blue	80	L6	80	L6

*American Association of Textile Chemists and Colorists. No rating yet established to cover more than 320 hours.

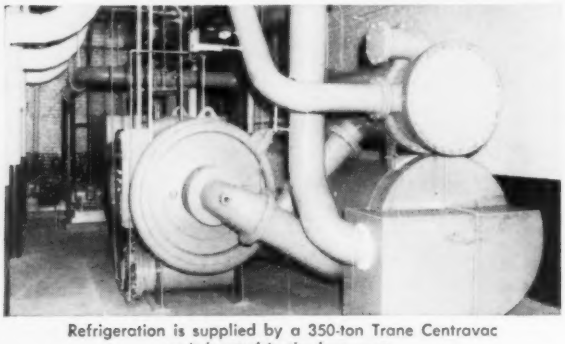
Courtaulds' rayon fiber with Captive Color... *"can't escape!"*

For further information, write:

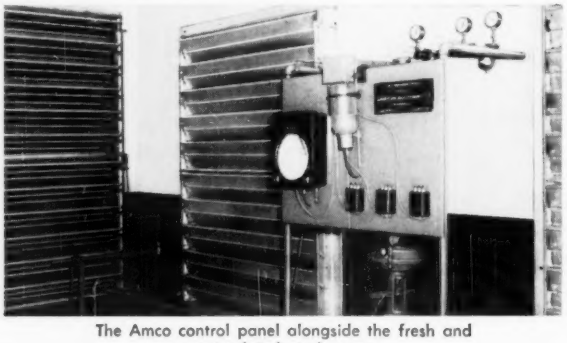
COURTAULDS **(ALABAMA) INC.** *First name in man-made fibers, first name in solution-dyeing*
600 FIFTH AVENUE, NEW YORK 20 • Greensboro, N. C. • Le Moyne Plant, Mobile, Ala.



Card room at Highland Park Mfg. Co., Mill No. 1, Charlotte, N. C. Ductwork and zone control atomizers are part of Amco's central station system, designed by J. E. Sirrine Company for the entire mill.



Refrigeration is supplied by a 350-ton Trane Centravac unit located in the basement.



The Amco control panel alongside the fresh and recirculated air louvers.

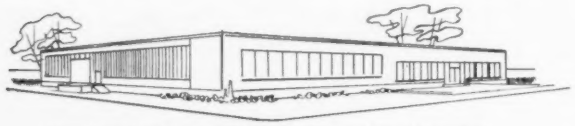
This ECONOMICAL split-system by Amco

provides thoroughly conditioned air, with maximum operating efficiency

Whether your need is for one room, or an entire mill, Amco offers air conditioning to meet your requirements. Amco designs and installs all types of systems — humidification alone; or in combination with cooling, such as in the ductless evaporating cooling system; unit dry-duct systems; or central station systems.

The central station system Amco recently completed at Highland Park Mill is a good case in point. In order to effect savings, it was felt advisable not to install the excess air capacity found in conventional design. Instead, Amco installed a "hand tailored" split system using a smaller central station unit augmented by room atomizers, thus reducing both initial cost and operating cost. This system provides complete control with even greater flexibility of operation. Savings have been substantial.

Amco engineers will be glad to work out a solution to any problem you may have. Next time call on Amco for reliable advice. There is absolutely no obligation.



New Cleveland-Rowan Plant of the American Moistening Company. This modern plant is located at Cleveland, N. C., for the fabrication of duct work and sheet metal products.

AMCO

AIR CONDITIONING SYSTEMS since 1888

AMERICAN MOISTENING COMPANY, PROVIDENCE, R. I. • ATLANTA, GA. • BOSTON, MASS. • CAMDEN, N. J. • CLEVELAND, N. C.

YOUR SHUTTLE

Costs Reduced

WITH THE HELP OF
SOUTHERN SHUTTLES
INCREASED LIFE EXPECTANCY

Leading mills throughout the world standardizing on *Southern Durawood* and *Duraweld* have found the amount of working loom hours per shuttle phenomenally far beyond ordinary *shuttle life expectancy*. Some users of the Duraweld Shuttle are reporting as high as 7,500 loom hours per shuttle.

In addition, an amazing reduction in shuttle costs through materially lessened maintenance, a tremendous increase in operation efficiency, and greatly improved quality of finished fabrics has been experienced by these mills.

Effect Your Greatest Economy By Buying The Right Product The First Time . . . Buy Stehedco and Southern

Take advantage of the research and engineering facilities this modern shuttle plant has at your disposal by contacting your nearest Southern Shuttles Sales Engineer.

Southern Shuttles

TEMPERED

QUALITY Stehedco CONTROL

STEHIDE

SOUTHERN SHUTTLES

World's Largest Manufacturer of All Type Shuttles . . . Comparisons Made Them Famous

A Division of Steel Heddle Mfg. Co.

Paris, Greenville, S. C.

TEMPERED DOGWOOD SHUTTLES • DURAWELD AND HICKORY PICKER STICKS
SUPREME REEDS • HARD CHROME ELECTRO PLATING • CASTINGS • STAMPINGS

It's "Southern" for Service and Delivery

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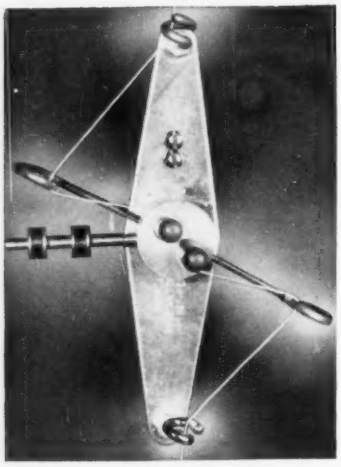

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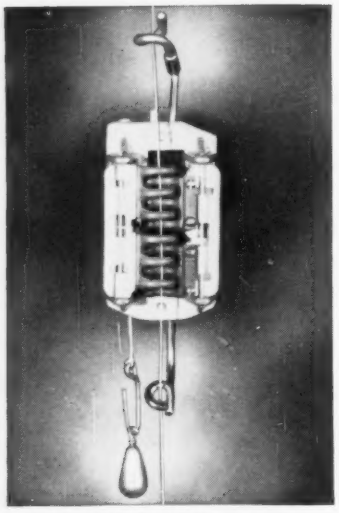

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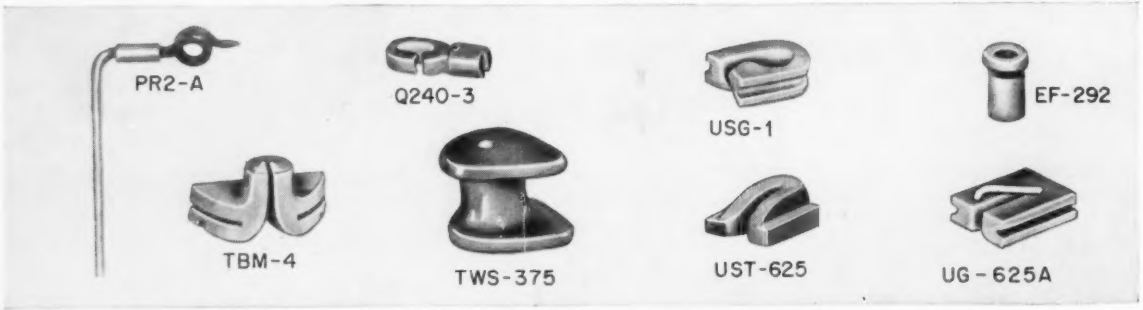

Write for full description on either of the two tension devices or parts above, which you feel might answer your needs. We would appreciate being called in on any of your tension or guide problems.

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Reference Chart

of

BEMBERG® RAYON NOVELTY-YARNS

TYPE YARN	DESCRIPTION	DENIERS	FUNCTION	FABRIC END-USE
SHORT NUBBI NUBBI INTERRUPTED SERIES	High-low, non-mechanical, short entangled slub, irregular in size and spacing. (Also specials running part slub, part smooth).	150-200-300 400-600-800	Filling with silk, cotton, acetate, nylon, Chromspun*, Fortisan*, Dacron*, or Orlon* warps.	Lower deniers in dress and blouse fabrics. Heavier deniers for draperies, upholstery, bedspreads.
TYPE "B" CUPIONI	Longer entangled slub, irregular in size and spacing, but mechanically controlled for the Douppioni silk-look.	50-70-100 150-275-450 600	Filling with silk, cotton, acetate, nylon, Chromspun, Fortisan, Dacron, or Orlon warps.	Dress, blouse, and shirt fabrics.
LONG TYPE "A" SLUB	Long, parallel, non-entangled slub for the true thick and thin look. Soft hand.	275-450-600 900-1250-1600 2500	Filling with silk, cotton, acetate, nylon, Chromspun, Fortisan, Dacron, or Orlon warps.	Lower deniers in dress and blouse fabrics. Heavier deniers for draperies, upholstery, bedspreads.
TYPE "C" LONG SLUB WARP YARN	Long thick and thin, similar to Type "A" but filaments are more closed, making it suitable for warp or filling.	150-275-450 600-900-1250 2500	Both warp and filling. Warp with any filling, including Bemberg nubbi-yarns. Plied with spun flake yarns for warp and filling.	Warp and filling for dress and blouse fabrics. Warp with any filling for drapery, upholstery, and bedspread fabrics. Plied with spun flake yarns for men's suitings.
MEASLE YARN	Part tight, part loose filaments with different shrinkage . . . forming loop or boucle effect. In weaving, loops break through surface of fabric for decorative dot effect.	1200-2000-3000	Filling with silk, cotton, acetate, nylon, Chromspun, Fortisan, Dacron, or Orlon warps.	Lower deniers as filling in dress and blouse fabrics. Heavier deniers for upholstery, draperies, bedspreads.
STRATA SLUB MULTI-STRATA SLUB MULTI-MULTI STRATA DREAM SLUB	Torpedo shaped slubs spaced: Strata, 9' apart; Multi-Strata, 6' apart; Dream, 18" apart. Multi-Multi Strata, 6' apart but shorter slubs than Multi-Strata.	150-275-450 600-900-1250 2500-5000	Filling with silk, cotton, acetate, nylon, Chromspun, Fortisan, Dacron, or Orlon warps.	Upholstery, draperies, bedspreads.
FLAKE SLUB	Short, entangled slub similar to flake slubs made with staple yarn. This yarn must be plied with a supporting end for commercial running.	300-600	Filling with silk, cotton, acetate, nylon, Chromspun, Fortisan, Dacron, or Orlon warps. As multi-colored decorative yarn. Plied with any Bemberg yarn.	Upholstery, draperies, bedspreads.
SPUN PLIED FLAKE	Part of the end running normal and part running with flake slub. Similar in softness and appearance to other flake, and will run in filling without being plied with a straight yarn.	300-600-900	Filling with silk, cotton, acetate, nylon, Chromspun, Fortisan, Dacron, or Orlon warps. As multi-colored decorative yarn. Plied with any Bemberg yarn.	Upholstery, draperies, bedspreads.
GLITTER	A monofilament yarn with a metallic appearance.	300-450	Filling with silk, cotton, acetate, nylon, Chromspun, Fortisan, Dacron, or Orlon warps. As multi-colored decorative yarn. Plied with any Bemberg yarn.	Decorative purposes in all fabrics.

* *Chromspun, Fortisan, Dacron and Orlon are registered trade-marks.*

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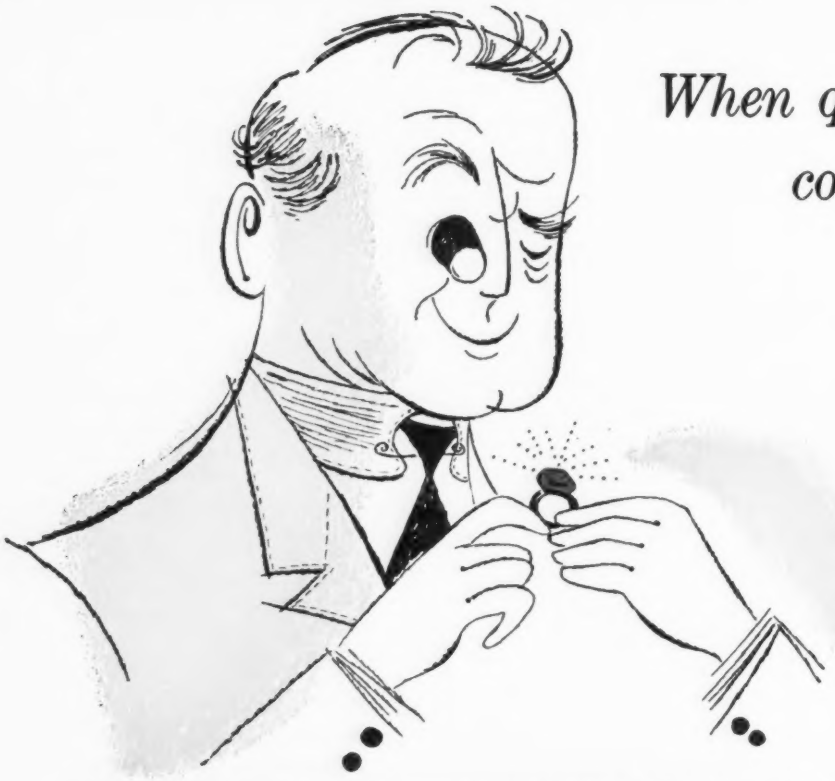

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MODERN
TEXTILES MAGAZINE

FEBRUARY, 1956
Volume 37, Number 2

Publisher's Viewpoint

The Priceless Value of Price Stability

During the past 12 months or so prices of man-made fibers as quoted by their producers underwent changes, up and down. These price movements were somewhat more frequent than has generally been the case in an industry noted for stability of prices. Without attempting to list these changes in detail, it should be noted that changes in acetate prices during the year were perhaps more noteworthy than other fibers. In the spring, one of the leading producers raised filament prices substantially. Other important producers soon after announced similar price increases. In December, however, after a period of much confusion in acetate trading, two leading producers announced new price lists which were substantially lower than prices as increased in the spring.

Non-cellulosic fibers during the past 12 months have also experienced substantial price shifts. Second grade nylon filament prices were advanced in the summer by two producers. In November, began a movement to make appreciable cuts in acrylic fibers which in time affected the quotations of all major producers. This movement spread to Dacron, as well as nylon staple and tow which was reduced as much as 30 cents per pound.

In themselves, these price fluctuations can fairly be regarded as signs of health in the chemical fibers industry. They show that producers of these fibers are engaged in competition in accordance with the economic practices which have made the United States a country of unprecedented wealth.

The substantial cuts in the prices of acrylic, polyester and nylon fibers are certainly indications of health and vigor. It is a sign of successful growth and acceptance when a new fiber, moving from early, limited stages of production, is able to pass along in price reductions the benefits of lowered production costs permitted by increasing volume output.

Thus it is possible to make out a strong case for the recent fluctuations in the non-cellulosic man-made fiber prices. However, with regard to the older established fibers, rayon and acetate, it is possible to sympathize with the millmen, converters and garment manufacturers who have been disturbed by these fibers' price fluctuations.

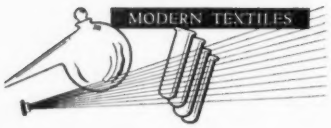
As spokesmen for the fiber users have pointed out, the price stability of man-made fibers has been one of the major reasons for their success. It should never be forgotten by the man-made fibers industry that its traditional stability of prices is an immensely valuable advantage in its continual growth. For many years one of the reasons why so many mills have liked to process man-made fibers is the fact that their price structure was stable. Thus weavers and knitters were able to operate with the assurance that yarn supplies were available without the need to tie up capital in heavy fiber inventories or make commitments in future contracts.

The great historical sales advantage derived from price stability is one the man-made fibers industry should do all in its power to preserve; in other words, price changes are decisions that should be weighed long and undertaken only when they seem necessary and unavoidable.

A. J. McCullough

PUBLISHER

OUTLOOK



in textile marketing

By Robert C. Shook
Textile Economist

On the Crest of a Wave? — The recent statement by Secretary of Commerce Weeks expressed considerable optimism about the prospects in 1956 for most industries, but made an exception for textiles. Textiles, it was suggested, were a highly cyclical industry, which appeared at the year-end to be near the crest of a cycle.

Pre-war textile activity did move in a surprisingly regular series of ups and downs. This typical movement was obscured during the war and for several years after. The usual cycles seem to have been restored, however, during the last four or five years. For man-made fibers, the cycles have been as follows:

MAN-MADE FIBER PRODUCTION
(in millions of pounds)

	Date	*Production*	*Duration*	*Change*
Low	2nd quarter, 1952	308.9		
High	2nd quarter, 1953	408.8	4 quarters	99.9
Low	1st quarter, 1954	321.6		
High	3rd quarter, 1955	427.4	6 quarters	105.8

It is plain that man-made fibers as a group now show the same type of cyclical activity that has characterized the textile industry as a whole. This applies particularly to rayon and acetate which are well established. Some of the newer non-cellulosics still have large-scale marketing prospects and a strong growth trend, and are less susceptible.

Price Stability Unlikely — Processors have a much simpler operating problem if the raw material they use has a stable price trend. In the pre-war rubber industry, for example, there were extremely wide price fluctuations for the raw material. Synthetic rubber could not have established itself unless it had met the requirements of tire producers, but its prospective price stability—as a man-made material—was a strong point in its favor.

Among the man-made textile fibers, rayon and acetate production has increased to a point where variations in market demand caused price fluctuations for the raw material. These are not always fully reflected in the fiber producer's quotations. Furthermore, the range of price change is extended by the fact that imported staple usually sells at a discount. Imports of rayon staple during the first 9 months of 1955 increased sharply, reaching 140 million pounds in comparison with 28 million pounds in the corresponding period of 1954. Much of this imported staple was sold at a fixed discount below domestic prices.

The magnitude of the increase in imports reflects the upward cycle of consumption in the United States. But there is no doubt that the domestic price structure would have been stronger and more stable if imports had remained at the level of 1954.

The non-cellulosic fibers, in the main, have not yet become subject to the textile cycle. Markets are still being opened and production is expanding. Prices at this stage are less subject to supply and demand factors than those of the more established fibers.

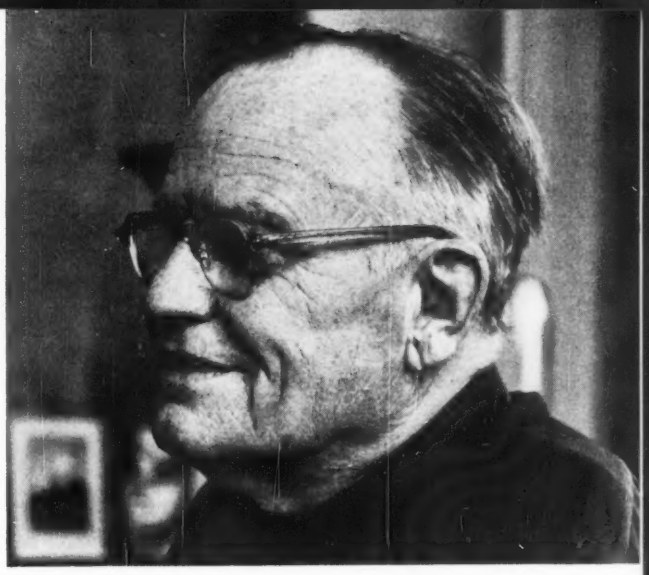
Even in this group, however, price stability is too much to expect:

a. Nylon filament yarn, at this stage, is in the process of becoming one of the older fibers, and is having to fight harder to sustain an expanding market. As we point out furtheron 1956 is not likely to show the same gains for nylon in tire cord as were recorded in 1955. On a poundage basis, in fact, there may be some losses.

b. Apart from nylon, the other non-cellulosic fibers are still comparatively new—at a stage where most processors expect a gradual decline in prices to a lower level. Price changes late in 1955 indicate that this decline is taking place according to schedule, as production increases.

(Continued on Page 91)

After a legend-making career in the auto industry George Borg took up knitting to occupy his spare time. The result has been fur-like fabrics that have astounded knitters and brought good business to coat makers



KNITTING KEEPS BORG YOUNG

By Jerome Campbell
Editor, MODERN TEXTILES MAGAZINE

GEORGE W. BORG is a famous man in American industry, and his fame, with its attendant fortune, were all earned long before he had ever seen a knitting machine. He is the man who, with a small group of associates, invented the Borg clutch and set up a company to make it back in 1911. Borg's clutch has been standard equipment on virtually all American autos for decades. In time, the original Borg firm grew to be the giant Borg-Warner Corporation, which manufactures a great many products in the realm of "hard goods" and nothing in the way of textiles.

Borg retired from the chairmanship of the Borg-Warner Corporation in 1940. Thereafter he devoted his time to numerous other business interests, most of which were activities of The George W. Borg Corp., a company he had formed some years earlier. He made his summer headquarters in Delavan, Wisconsin, a small town near Lake Delavan, where he established a country home. The chief industry of Delavan was the old Bradley Knitting Mills, a company that had fallen sadly behind the times and was in chronic bad shape financially. Borg leased a small space in one of the Bradley buildings to house some research work. He thus had some contact with the Bradley people and heard their complaints about bad business.

"Why don't you style up your line," he suggested once to the Bradley head man. "Get out some up-to-date swimsuits like those Jantzen cuties I see on the billboards. It seems to me that those knee length bathing drawers you produce are definitely behind the times."

The Bradley executive was horrified. What? Manufacture those shockingly scanty swimsuits for young females that outfits like Jantzen make? He expressed the firm opinion that modern swimsuits were provocative of sin in the large amount of female flesh they left exposed to be admired by male eyes. "We would rather go out of business," he declared, "than be a party to furthering the delinquency of young girls."

This is exactly what happened within a few years. And George W. Borg in response to the desperate appeals of his fellow townspeople, bought up Bradley Knitting Mills and continued to operate it. The year was 1940, an auspicious time, as all textile people remember, for getting into the knitwear business. In the following years of war orders and postwar textile boom, the Fabric Division of The George W. Borg Corp., as it was now called, did well. But when the market for wool sweaters and similar staple knitted items slackened in 1948, Borg instructed his plant executives to sell the worn-out knitting machines which had come with the Bradley purchase.

But he made one reservation. "Don't sell those pile knitters," he told them. These were the machines that knitted a deep pile wool fabric used in machine buffing automobiles to a high polish. Perhaps it was because these buffing discs were used by the auto industry about which Borg knew so much; perhaps it was something about the mechanical function of the pile knitters that intrigued him. But whatever the cause, these pile machines were the only knitting equipment that had any attraction for Borg, a man who has a deep knowledge of machine design and function arising from a lifetime of successful manufacturing of auto components.

Borg studied the operation of these knitters and studied the pile fabrics they produced. He began to speculate on what new and different fabrics could be knitted by these machines if they were improved and if nylon and other new synthetic yarns were used instead of cotton and wool. From this curiosity was born the effort which in five or six years was to result in Borg deep pile fabrics such as Borgana and the brand-new Borglura—fabrics which have achieved a really dazzling success in the apparel industry, and have made many in textiles regard Borg with awe and envy as a miracle man.

(Continued on Page 63)

New Celanese Marketing Drive

STAFF PREPARED

Converters made chief target of reorganized, beefed-up program

A NEW and revitalizing energy is being directed into merchandising activities by Celanese following the recent consolidation of sales, merchandising and related functions into one marketing department under John Brooks as Director of Marketing. Merchandising at Celanese is defined as all activities which contribute indirectly to sales, according to Paul White, who recently took over as general merchandising manager, reporting to Brooks. Celanese merchandising activities are broadly aimed at creating a hospitable climate throughout the textile industry in which an increasing demand for Celanese yarns will blossom and grow.

Celanese's new marketing and merchandising program is based squarely on the conviction that the converter is the key figure in the textile distribution picture today, an idea long held by vice president and director John Holmes. The new merchandising outlook at Celanese is a change from earlier thinking which regarded the mills as the prime field of merchandising spade work. Celanese shifted its merchandising emphasis from mills to converters when it realized that the mills weave what the converters want; and if converters are not persuaded to specify Celanese yarns, the mills will not buy them.

This shift over to a regard for the converter as the key to yarn merchandising stemmed directly from a growing awareness that the converter is a man who fulfills a crucial role in making and marketing of fabrics. Celanese has grasped the truth that the converter, headquartered in New York in close contact with the apparel market, has to know, if he is to stay in business and make money, what kind of fabrics garment manufacturers want today and will want tomorrow. And once he is assured of this knowledge, the successful converter has to know where he can get these fabrics woven or knitted and then dyed and finished in a way that will satisfy his customers and at the same time show him a profit. The converter, as Paul White expresses it is thus "the fulcrum on which Celanese as a yarn producer places the lever of its sales effort."

Fabric Development Staff Is Large

As with other yarn producers, Celanese as a basic merchandising operation maintains a hard-working, capable fabric development department operating in the three textile realms of menswear, womenswear, and home furnishings. (Knit goods development and promotion at Celanese were described at length in this magazine's September, 1955, issue, page 31, and hence is omitted from this report.)

Some 18 months before any given season, Celanese's woven fabric development group has available to mills and converters a broad range of sample fabrics which can be taken and reproduced by mills and converters. To maintain this operation, Celanese has a considerable textile manufacturing plant equipped with 45 looms, plenty of spindles and supported by a fully equipped dyehouse. Incidentally, all the development equipment is now being concentrated at Celanese's Charlotte, N. C., plant.

These same facilities are available to converters who want a special fabric on an exclusive basis. In such case, Celanese will weave and finish the fabric according to the converters ideas, furnishing him with a full piece for a nominal charge. The steady stream of new fabrics thus made available provides a rich source of nourishment to feed, season after season, the fashion industry's insatiable appetite for new and interesting fabrics.

Celanese's development service to the textile industry does not stop at providing samples of new fabric constructions to converters and mills along with technical information on how to weave and finish them. In addition, advice is made available to garment manufacturers in connection with cutting and sewing problems.

Results Watched at Retail Level

Also, going beyond work with manufacturers of fabrics and garments, Celanese maintains throughout the country a staff of 75 specially trained women who work with stores to obtain, at the crucial retail level, the most effective promotion of products made with Celanese fibers.

To reinforce this basic program of promotion, Celanese has during the past 12 months begun a companion effort which is also tied in closely with the conviction that converters are the key to profitable yarn sales. This program is limited to a much narrower range of fabrics than the basic program already described. It works this way: each season Celanese selects certain constructions made with its yarns as being specially deserving of an intensive promotional effort. In making the selection, many factors are considered, including the feeling that Celanese sales and fabric development people have for the particular fabric and their evaluation of its chances of making a really smash hit with the consumers. If, in the opinion of Celanese people, a fabric has a lot of features that make it seem likely to succeed with the consumers in the big volume markets, they are apt to select it for a special promotional effect. Sometimes, it may be a new construction which seems to fit in smoothly with prevailing style trends as Celanese gauges these trends. Or more likely it may be a construction brought out a season or two earlier and which now seems extra specially right for a big promotional push.

Once a fabric is selected, Celanese handles it like a conventional operation. An order for a sizable quantity of yardage is placed with a gray goods mill who weaves the cloth exactly according to Celanese's stringent specifications, using, of course, Celanese fibers. Likewise according to the company's exacting specifications, the cloth is dyed and finished. The result is an acetate or Arnel cloth of the highest quality

(Continued on Page 70)

we wove a smaller sample

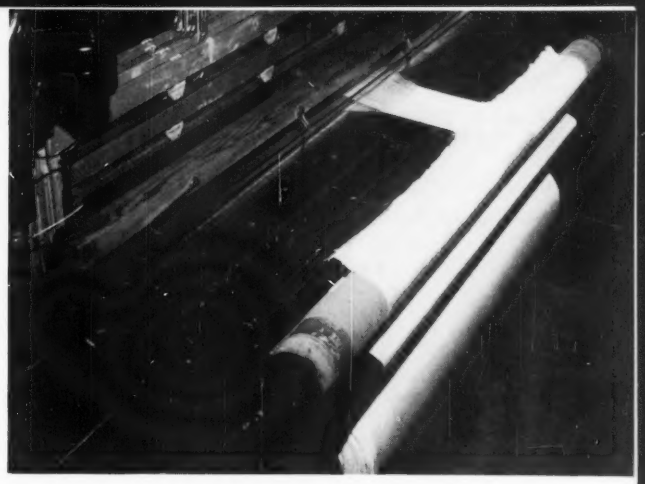
say PTI men: here's their story

By Paul Siminuk

THERE APPEARED in the December issue of MODERN TEXTILES Magazine an article written by B. L. Whittier, School of Textiles, North Carolina State College entitled "Can You Weave a Smaller Sample?" In the article an outline was given of how the fabric development department of this school wove a sample 18 inches long by 12 inches wide and concluded by challenging anyone to produce a smaller sample on a 36 inch reed space loom.

It is not the purpose of this article to accept the challenge, but rather to demonstrate that anyone using the proper approach can weave a smaller sample. In our research and development work at Philadelphia Textile Institute we have often been called upon to weave six, eight and 12 inch wide samples. The weaving has always been done on looms with 40 or more inches reed space. The steps prior to weaving, such as making a short warp, offer no real problem because we feel that the practical minimum amount of yarn that could be produced on any spinning system could be made into a woven fabric.

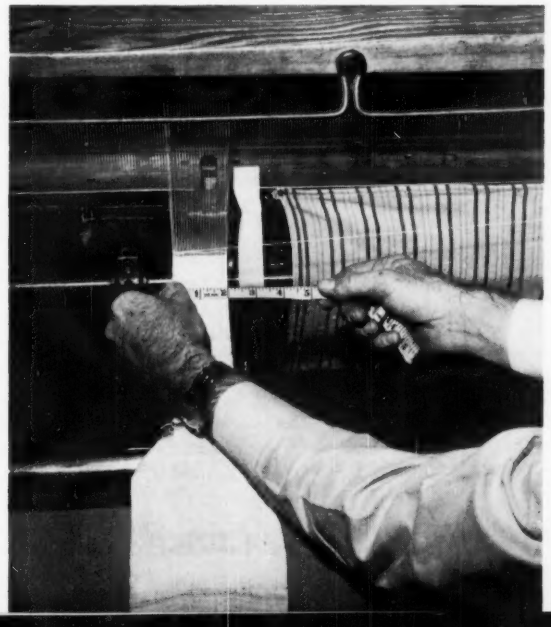
However, the normal procedure of centering the warp in the reed and the reed in the lay can create difficulty in weaving a narrow fabric on a broad loom. The critical width is reached when the distance from the eye of the shuttle (shuttle in box) to the selvage on the same side of the loom is greater than the distance from that selvage to the eye of the shuttle in the opposite box. This results in more yarn being pulled from the shuttle as it travels in one direction than in the other which, in turn, results in loops forming on one side of the fabric. Therefore it becomes apparent that the warp should be centered to the *eye* of the shuttle and not the *lay*.



Original warp of 61 inches cut down to 8 inch width and first sample woven on 82 inch W-3 loom

Dean France (right) of Philadelphia Textile Institute and Professor Siminuk examine the samples off the loom

Two inch sample successfully woven. Fabric fastened to lay to prevent filling from catching onto bolts in lay assembly



To demonstrate this principle without wasting time, we utilized the end of a warp in our 82 inch reed space W-3 loom. It was our feeling that if we could demonstrate the principle on a loom that is over twice as wide as the one used in the N. C. State project it would be true for all looms regardless of size.

The warp, which was 61 inches in the reed, was cut down to weave first an 8 inch sample, then a 5 inch sample, and finally a 2 inch sample. A sample ½ inch wide was woven but there were not sufficient ends in the warp to rotate the beam.

The following is an explanation of what would have happened on the 2 inch sample if the warp had been centered in the loom instead of the eye of the shuttle.

(Continued on Page 70)

MILL TEST PROCEDURES

a new series on quality control

By Norbert L. Enrick*

Tests for Better Carding

Second of a Series

THE TEST PROCEDURES described here are applicable to carding of cotton or cut-staple synthetic fibers on cotton cards. In particular, the following test procedures are described:

—Card Web Nep Count
—Card Fly Waste (or Droppings) Test
—Card Flat Strips Quality Test
—Sliver Can Contents Check

The purpose, methods of sampling and testing, and evaluation of test results are covered in each procedure.

Supplementary Illustrations

Supplementary illustrations are furnished showing:

—Sampling technique for card web nep count, see Fig. 3.
—Diagram of carrying container for empty and full nep counting boards, also in Fig. 3.
—Form for convenient recording of test results of Card Fly Waste Test, in Fig. 4. This form includes a section for calculations and a section for summary of results.
—Similar form for the Card Flat Strips Quality test, in Fig. 5. This form may also be used for card sliver weight sizings.

In the procedure for Card Web Nep Count, reference is made to photographic standards for nep size, developed and published by the American Society for Testing Materials in the Manual of Standards on Textile Materials, in Philadelphia. Since most testing laboratories will usually have a copy of this important reference manual, it should be a simple matter to look up the standards for various nep-size categories in relation to the maximum size that can be tolerated for a mill's product.

Special Consideration in Nep Counting

While most of the test procedures furnished are self-explanatory, a special note may be required for nep counting. In accordance with recommended ASTM (American Society for Testing Materials) practice, the procedure furnished here provides for finding and expressing neps in terms of neps-per-grain of card web. Some authorities, however, and many mills prefer to use "neps-per-100-square-inches" of card web. The disadvantage in the latter term is that the value obtained is not readily comparable against other mills, since the weight of card webs may vary 20% or more between different mills.

For example, a mill having 20 neps per 100 square inches of card web, and producing a 50-grain card sliver has really a much poorer quality web than a mill with identical nep count of 20 per 100 square inches, but producing a 60-grain card sliver. Since a heavier web represents more cotton or other fiber, it is only natural that the 50-grain sliver web would show more neps if the weight were increased. Actually, if there are 20 neps per 100 square inches of 50-grain sliver, we would expect in a 60-grain sliver of the same material to find 60/50 x 20 or 24 neps per 100 square inches.

This illustrates the desirability of expressing card web nep counts in terms of neps-per-grain.

Tests Omitted

A number of tests have not been written up here, since they will be included in more general procedures later. These are concerned with speed tests, sizing tests, and evenness tests. The problems here are similar to those on other processing operations in the textile mill, and can therefore be covered better in an overall procedure for each category.

Frequency of Testing

After deciding that a certain type of test is worthwhile for a particular mill, it must be further decided how often this test should be performed. This depends to a large degree on the type and age of equipment, the raw stock used, the end-product desired, and the degree of quality protection which can be economically justified. Despite these involved aspects, a mill will usually find that the following are very suitable frequencies for most purposes:

1. *Card Web Nep Count:* Each week, about ten percent of the cards should be tested; however, where past quality records have been good, this might be dropped to five percent.
2. *Card Fly Waste and Flat Strips Quality:* Use the same rule as for Card Web Nep Count.
3. *Card Speeds:* Test all cards, once every five weeks.
4. *Card Sliver Evenness:* Test five to ten percent of the cards, once per week.
5. *Card Sliver Weight:* Test five to ten percent of the cards, once per week.

Importance of Carding Quality Control

The primary function of carding is to remove short fibers, trash, leaf and neps. In addition, a certain amount of orienting of fibers along the sliver axis is accomplished. Subsequent drawing is designed to further orient the fibers and to straighten out those fibers that may be embedded in hooked or doubled-over form. Naturally, the success of the drawing operation is limited by the degree of uniformity with which the carding operation has fulfilled its function.

(Continued on Page 38)

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Formerly with Werner Textile Consultants.

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For super-powered sales appeal in your new lines, let National help you add the plus value of dynamic color styling to your fabrics. Any color effects your stylists conceive, we can translate into economical dye formulas for production runs.

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TYPE "DW"

Super-Speed WARPER

The new Barber-Colman Type "DW" Warper, shown above, has all the features of the familiar Type "VW" plus several new ones. A pivoted support moves the comb forward as the beam fills. The driving drum, clutch, brake, and motor are now arranged back of, rather than beneath, the beam. Construction throughout is larger and stronger, to handle the heavier loads of which this warper is capable. The Type "DW" Warper will wind slasher beams as large as 40" head. *For further details, please write for descriptive literature, or ask your Barber-Colman representative.*

40"-head BEAMS REDUCE COSTS

Using 24s yarn as an example, the new Type "D" 6-pound cheese holds 120,000 yards. A 40"-head section beam of 529 ends weighs 1,050 lbs. and holds 40,000 yards, resulting in 3 beams per cheese and reducing warper loadings accordingly. In the slashing, assuming 1200-yard loom beams, a 40"-head section beam will produce 39 loom beams per set, for an average of only 3.16 slasher creelings per 120-hour week.

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For *all* your Barber-Colman machines, be sure to call on the Service Department of your nearest Barber-Colman office. The men who staff this organization are specially trained and equipped, with a wealth of experience in checking, maintaining, repairing, and modernizing all types and models of Barber-Colman equipment. They are backed by alert main and branch offices who see that they are supplied with complete and reliable parts and information.

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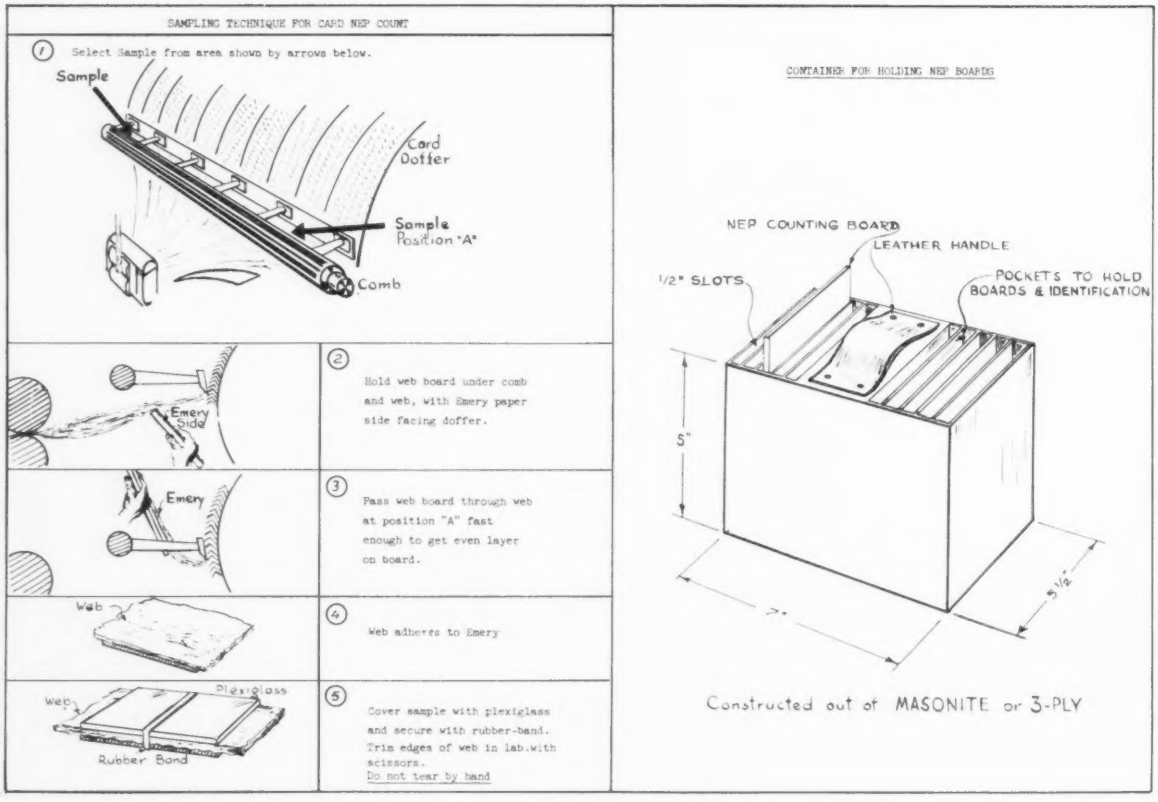


① Select Sample from area shown by arrows below.

② Hold web board under comb and web, with Emery paper side facing doffer.

③ Pass web board through web at position "A" fast enough to get even layer on board.

④ Web adheres to Emery

⑤ Cover sample with plexiglass and secure with rubber-band. Trim edges of web in lab. with scissors. Do not tear by hand

Constructed out of MASONITE or 3-PLY

Fig. 3

Carding Tests *(Continued from Page 34)*

Often, the ability of a mill to maintain good running conditions in roving and spinning and making a good quality yarn is based upon superior control over the carding operation. The type of tests recommended here, performed on a regularly scheduled basis, aid the mill in maintaining good control over the quality and uniformity of performance of the cards. In the end, such testing and control will pay for itself many times in the form of improved running conditions—and therefore lower labor costs—in roving and spinning, not to mention the additional advantages deriving from a stronger and more uniform yarn.

CARD FLY WASTE (or DROPPINGS) TEST

Purpose

The amount of fly waste or droppings from each card, accumulated under the card, requires checking and control. This will insure standard removal of trash and short fibers, prevent excessive loss of spinnable fibers, and aid in the maintenance of uniform sliver weight among cards of the same mix.

Equipment

Scale, capacity 2 lbs., sensitivity 0.01 ounces. Container for gathering fly under each card.

Sampling

Perform a two-hours' test on a group of cards selected for this purpose.

Procedure

Clean out the front and back of the cards to be tested, both at the start and at the end of the test. Then:

1. Collect and weigh the fly or droppings obtained from each card.
2. Determine the standard production per card for the period of the test.
3. Adjust this production for any stoppages of more than 2 minutes, by the amount of time actually lost in this manner.

(Continued on Page 51)

Fig. 4

Werner Tex. Cons.
New York 17, N. Y.

CARD FLY WASTE TEST

Mix																		
Card No.																		
Weight of fly in oz.																		
Card Prod'n in oz.																		
% Fly																		
Off Std. (X)																		
Mix																		
Card No.																		
Weight of fly in oz.																		
Card Prod'n in oz.																		
% Fly																		
Off Std. (X)																		
Mix																		
Card No.																		
Weight of fly in oz.																		
Card Prod'n in oz.																		
% Fly																		
Off Std. (X)																		

STANDARD CARD PRODUCTION

1. Std. Prod'n./Hr. = ________ lbs. X 16 = ________ oz.
2. Test started ________ 3. Test ended ________
4. Length of test, (3)–(2), = ______ Hrs. ______ Min. = ____ Hrs.
5. Std. Prod'n. during test (oz. X Hrs.) = ________ oz.

STANDARDS				
Mix				
Std. % Fly				
High				
Low				

SUMMARY				
Mix				
Total				
No. of Cards				
Average				

If there are any remarks, check here ☐ and use other side of this form

Date:

Tested by:

Celanese Fortisan*-36 Rayon presents outstanding opportunities to the weaving and throwing trades

Current success of FORTISAN-36, the new Celanese high tenacity, heavy-duty rayon from saponified acetate, offers an excellent opportunity for mills selling to the mechanical rubber goods, coated fabric and other industrial markets.

The extreme tensile strength, low elongation and exceptional dimensional stability of FORTISAN-36 is dramatically changing weight strength ratios now in use for standard constructions. For example, a standard 42 oz. cotton fabric popular in the rubber industry can be duplicated in a cloth weighing 21 oz. by using a FORTISAN-36 warp of equivalent tensile strength. Applications where performance of FORTISAN-36 appears outstanding are:

V-BELTS: Used as a reinforcing cord or as a cord fabric, the fiber's dimensional stability makes possible matching belts. Cords of FORTISAN-36 do not expand or contract under atmospheric changes or work as will belts using competitive fibers. Some of the singles, cords, and cables presently employed are 1600/5,6. 1600/2/3. 800/3. 800/4/3. 800/5/3.

HIGH PRESSURE FIRE HOSE: Used as filler cords in interior and exterior jackets it makes possible light, very strong, flexible, highly heat resistant hose which racks and handles easily. Cords now used are 1600/5,6,7,8,9,10.

CONVEYOR BELTS: FORTISAN-36 makes possible extremely strong yet thinner, lighter-weight belts with good troughing qualities that permit employment of longer distances between centers and higher tensions. Cords, cables and woven ducks are used here.

HIGH PRESSURE BRAIDED HOSE: The fiber's qualities permit lighter, safer, more flexible and pressure resistant hose. Now being produced are 1600/1,2,3. 800/1,2,3.

TARPAULINS: Elastomer coated FORTISAN-36 flat yarn woven fabrics have outstanding advantages in dimensional stability and strength during all processing and use. The final product has excellent tear and puncture resistance, and is resistant to ultra-violet degradation.

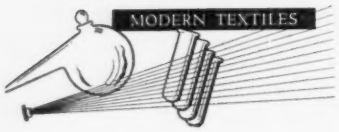
WEBBING: FORTISAN-36 low stretch tent, cargo tie-down and automotive safety belt webbings woven with a stuffer construction offer desirable properties in high strength, stretch resistance, and dimensional stability.

Other applications in which FORTISAN-36 is proving its merit are auto truck tires, plastic laminates, filters, paper reinforcement and oil hose.

For information on FORTISAN-36 write for Booklet TD 20A. This revised booklet was printed during the past few weeks to incorporate additional data on FORTISAN-36 cords and fabrics. Celanese Corporation of America, Industrial Sales Department, Textile Division, Charlotte, North Carolina. Branch offices: 180 Madison Avenue, New York 16; Pilgrim Square Building, 9 Overwood Road at West Market Street, Akron 13, Ohio. Telephone TE 6-2392.

*Reg. U. S. Pat. Off.

Celanese FIBERS FOR INDUSTRY



Report from EUROPE

STAFF PREPARED

LONDON: Britain's Best Year — British man-made fiber manufacturers understandably tend to minimize 1955's record production achievement in the light of 1956's twin problems of greater competition and rising costs. Nevertheless, last year saw output of rayon filament yarn and rayon staple score a peak high of better than 39 million pounds per month, compared with 37.3 million in 1954, the previous high year.

Sir William Palmer, chairman of the British Man-Made Fibres Federation, registered this "bitter-with-the-better" feeling in his 1955 annual report which said, in part, "We cannot claim to have had a good year, but, on the other hand, it has not been such a bad year for us as might have been feared, having regard to the experience of our neighbors, the cotton industry."

Sir William also stated in the report that the group is bending all efforts to have itself represented in as many exhibitions as possible with the view of realizing a continuing propaganda. The "widening of markets" is basic to the federation's aims, and it was for this purpose that a new Tariff Service was organized for the association's members.

Worldwide Tariff News — This Tariff Service will offer a summary of duty rates on yarns and fabrics made of man-made fibers from as many countries as possible. In addition, comparisons of duties paid on other textiles will be set forth, converted into pounds sterling. The duty summaries are divided into two parts: the Commonwealth and the rest of the world. And each part is subdivided into two divisions: (1) import tariffs and other costs, and (2) other official trade restrictions, such as licensing conditions and quotas.

The Commonwealth portion of the survey has been finished and members recently received a report on Canada. It is expected that further non-Commonwealth country studies will soon be forthcoming.

Stretch-Nylon Boom — Stretch-nylon is not much newer in Britain than it is in the United States. But British industry, at the moment, is entering a phase which should see, during the year, a vast opening demand for these yarns in such products as hosiery and, to a lesser extent, light outerwear. Britain's hosiery manufacturers recently arrived at the decision to allow maximum "stretch" commensurate with good styling. They realize that the "stretch" alone without eye-appeal could be disastrous.

Along these lines, British Nylon Spinners Ltd. and Deering Milliken Research Corp. recently entered into agreement which will see the British firm authorized to carry the trade mark, Agilon, described here as a new type nylon continuous mono or multifilament yarn with pronounced elasticity as well as a silk or a crisp feeling. Some regions of Britain have been using stretch nylon, of micro-mesh types, in two sizes, 8½ to 9½ and 10 to 11½. Use of Agilon will see extension of seam-less stockings in Britain although the new fiber is expected also to be available for men's hose.

Good Export Year, Too — Although final export figures or 1955 are not yet available, it was apparent that last year saw a revival in many British-made fiber exports, but especially of staple fiber—with the United States as prime market. Britain's global staple fiber exports through last October totaled 44.88 million pounds, as against 32.35 million of both staple and yarn for all 12 months of 1954. Filament yarn exports about equalled the previous year. Fabric exports, made both from filaments and spun yarns, however, were down sharply. This is almost unanimously attributed to rising Japanese competition and greater output in Germany.

The industry now is also worried about U. S. competition, a case of the "shoe being on the other foot." For during most of 1955, British man-made fiber manufacturers were watching fabric sales to South Africa go down the skids at the same time that this country's imports from the U. S. staged a sharp revival. Both Japan and Germany have outstripped Britain as suppliers in Argentina.

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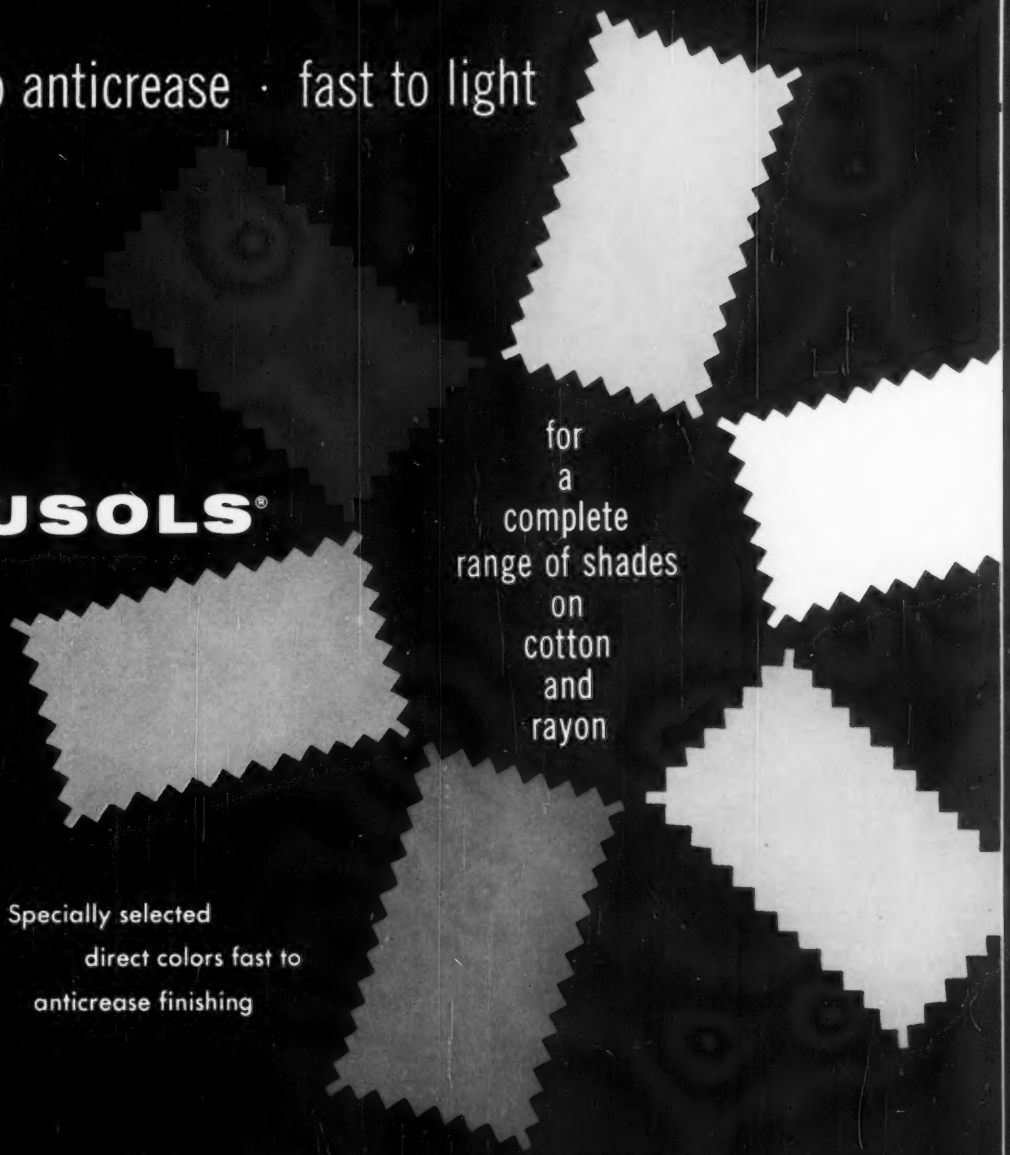

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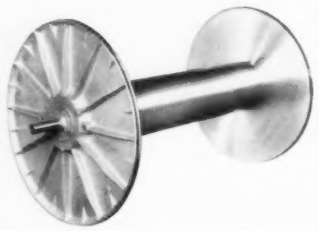
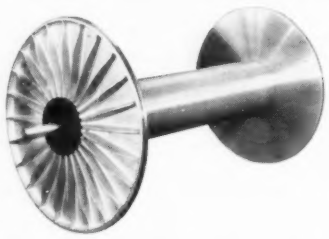
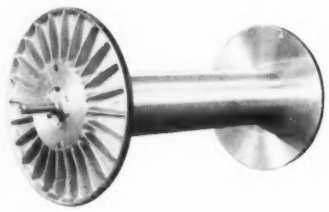


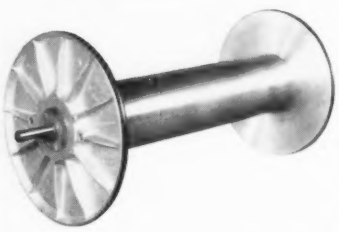
HAYES 38" x 54½" Aluminum Section Beam for cotton and spuns. Lightweight 207 lbs. Capacity, net weight of yarn 1,050 lbs.



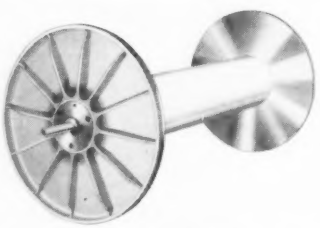
HAYES 36" x 54½" Heavy Duty Aluminum Section Beam for acetate, spuns, and cotton. Can be adapted to all standard warpers.



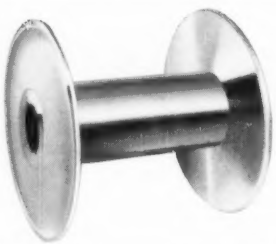
HAYES Heavy Duty Section Beam for nylon. Can be furnished in 30" and 32" diameter heads. Barrel diameter 11¾". ½" minimum wall.



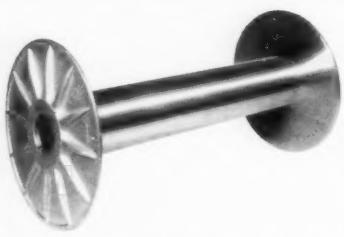
HAYES Bolted Type Section Beam for acetate. 30" x 54¼". 11¾" diameter barrel. Can be adapted to all standard warpers.



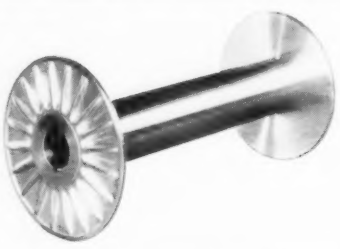
HAYES Aluminum Section Beam for acetate. Screwed type. Head sizes 26", 28", 30", 32". 54¼" traverse. 11¾" diameter barrel. Can be adapted to all standard warpers.



HAYES 21" Aluminum TRICOT Beam for nylon. Barrel size 7¾" diameter. Head thickness 1". Furnished in ⅜" and ½" wall. Bored for 4½" shaft. Keyways 9/16".



HAYES 21" Aluminum TRICOT Beam for acetate. Barrel 7⅜". Head thickness 1". Any desired traverse. Bored for 4½" shaft. Keyways 9/16".



HAYES 21" Heavy Duty Forged Head Aluminum TRICOT Beam for nylon. Head thickness 1¼". Barrel 7¾". ½" wall. 39-7/16" traverse. Bored for 4½" shaft. Keyways 9/16".

HAYES 13¾" diameter Aluminum TRICOT Beam for acetate. Barrel size 4.925" diameter. Made in head thicknesses of 39/64" and 1". Traverse dimensions to suit. Bored for 2¾" shaft. Keyways 9/16".

HAYES manufactures a variety of Aluminum Loom Beams to fit Draper, and Crompton & Knowles looms, for acetates, spuns, and nylon. These can be manufactured with fixed or adjustable heads in sizes from 22" to 32" diameters.

use these methods to set up

new hosiery specifications

Try mathematics rather than rule-of-thumb, says this expert

By Erb N. Ditton
KNITTING CONSULTANT

THE SETTING UP of full fashioned hosiery specifications has, too often had an aura of mystery thrown about it, instead of being considered as a largely mathematical problem, which it actually is. This condition has been largely due to the fact that the industry has too frequently been satisfied to solve its specification problems by "rule of thumb" methods instead of availing itself of the methods of textile technology. Product development in this field has, with few exceptions, not achieved the technological status which is far more common in the weaving industry.

The problems involved in the setting up of hosiery specifications can largely be solved by mathematical methods. Obviously, styling is not a factor for which a mathematical solution is possible, but once styling has been determined, the necessary specification changes can be made by mathematical means.

The most important element to be remembered is that seldom do new specifications have to be made up for which no previous background of experience exists. The most difficult problems arise when a completely new type of yarn is introduced. But even here, previous experience on standard yarns can almost alway serve as a guide. This special problem will be discussed later in this article, but the present discussion will be limited to specifications using the generally standard Nylon type 66 in the normal range of twists which eliminates, for the present, any discussion of the various types of stretch yarns or of other types of nylon.

The exact amount of information and the form in which it is to be supplied on the knitting specifications is best left to the individual mill since it is seldom that any two organizations will agree as to the exact form or contents of the specifications. However, all pertinent information—and in sufficient detail—must be supplied so as to enable any knitting supervisor or machine fixer to produce a stocking exactly as called for by whoever is charged with the responsibility of translating the desires of the sales or development department into the language that the mill men will understand.

The specific factors with which this article is principally concerned are gauge, courses per inch, narrowing and widening, and denier. While the exact meaning of these terms are well known to the hoisery industry, it may be well to define them for the benefit of those less familiar with technical knitting terms.

GAUGE: This term is a measure of the needles per inch and a half on the knitting machine itself so that the actual needles per inch is given by 2/3 of the gauge. Thus, there are 40 needles per inch on a 60 gauge machine. Gauge is an "on machine" measurement and has no reference to stitches per inch in the stocking itself after the knitting has been completed.

COURSES PER INCH: This term refers to the number of horizontal rows of stitches in one inch of the stocking and may be measured either on the machine or after the knitting has been completed. However, all specification references to course per inch are based on "on machine" measurements.

NARROWING AND WIDENING: During the fashioning (shaping) operations in knitting, needles are dropped or added as necessary. While not universally true, each narrowing generally represents the removal of two needles from the width of the fabric and will be so considered in this article. Since narrowing takes place at or near selvage, the fabric must be considered to be reduced by four needles for each narrowing. Widening, which is the exact reverse of narrowing, generally is used only to add one needle at a time so that only two needles are added for each widening.

DENIER: This term would appear to be too familiar to require definition. In any event, it need merely be considered as a measure of yarn size.

The above four factors can hardly be considered separately as they are to such a large extent interdependent, but with this understood, a brief discussion of each of them and their interrelationships will prove helpful.

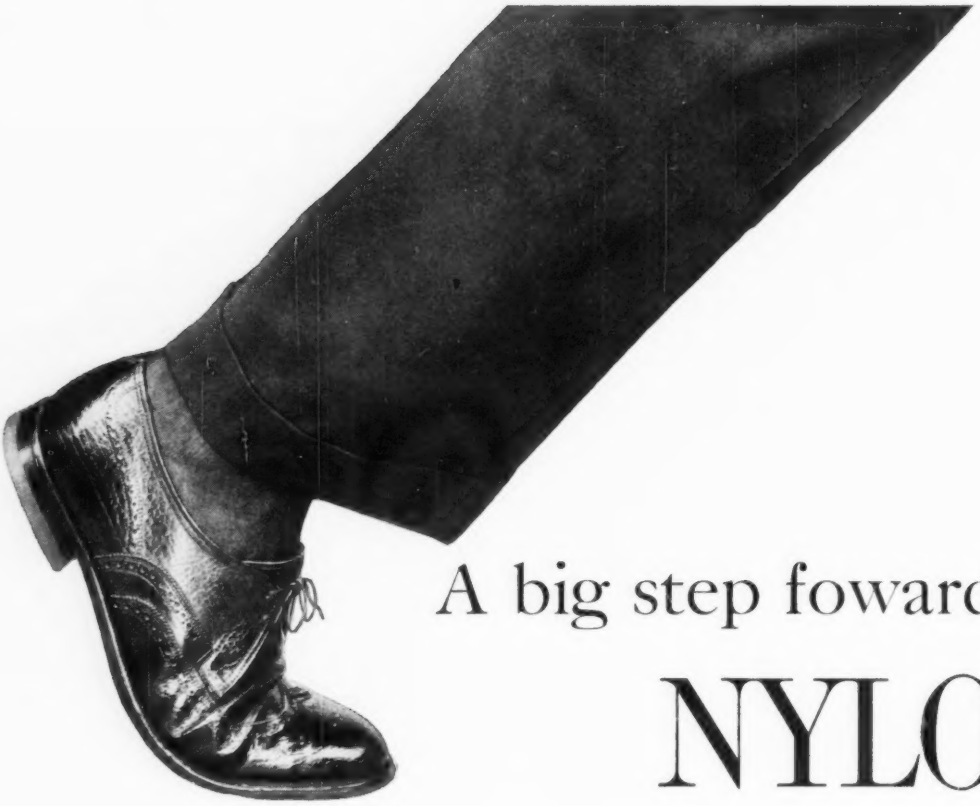
A gauge change will affect two fabric characteristics—stretch and density. As gauge is merely a measure of needles or wales per inch, it must be obvious that any change in gauge will make a corresponding change in fabric stretch with the higher gauges giving the most stretch. A change in gauge will normally change the fabric stretch by 5 to 6% per gauge. Increasing the gauge increases the fabric density and the reverse is, of course, true if the gauge is decreased. In order to retain proper fit, it is, therefore, necessary to change both the courses per inch and the number of narrowings with the relative importance of these two factors being determined by whether or not it is desired to maintain fabric density at the same level.

A change in courses per inch also affects both fabric stretch and density. Increasing or decreasing the courses per inch will normally change the fabric stretch by 2 to 2.5% for each increase or decrease of one course per inch.

Changes in narrowings mainly affect fabric stretch and normally increase or decrease the stretch by from 1 to 2% for each two needle narrowings.

Denier changes also affect stretch and density characteristics. A reasonable rule to follow is to make a change of 2 courses per inch for each increase or decrease of 10 to 15 denier; but since there exists a definite gauge and denier relationship, caution must

(Continued on Page 46)



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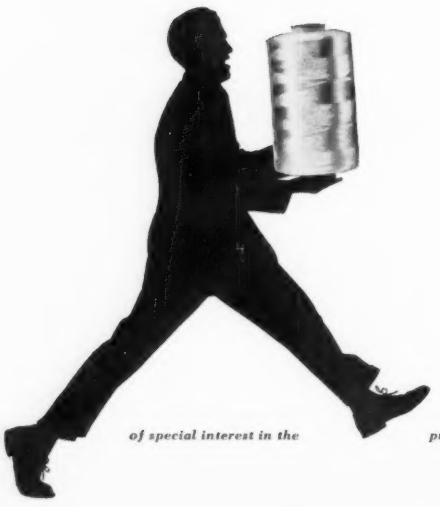

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Caprolan *tensile-tough* nylon heavy yarns have a *minimum* average standard tenacity of 6.5 grams per denier, and retain 90 per cent of their strength in the wet state. Initial put-ups are on ten-pound parallel packages and contain *nominal* twist. These packages create no twisting problems in the mill and eliminate the need to ply several ends of smaller deniers to obtain a higher total effect.

For information and technical assistance, write: Fiber Sales and Service,

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Hosiery Specifications

(Continued from Page 43)

be exercised when either heavy deniers are knit on very fine gauges or fine deniers on coarse gauges. However, the suggested denier effect remains a good basis for the setting up of the first specifications for the new construction.

The above principles and their interrelationships can best be shown by the use of some actual examples.

Example One

Problem: To produce a 15 denier, 51 gauge stocking with the leg knitted at 46 courses per inch would retain all the satisfactory fit characteristics of a current construction knit at 50 courses per inch.

Solution: The first step is to determine the total number of leg narrowings necessary to accomplish this, using the same 476 needle starting width as in the tighter construction.

At 50 courses per inch 44 total leg narrowings had been used which left a needle width of 300 after the last leg narrowing. Since fabric stretch changes from 2 to 2.5% for each change of 1 course per inch, a change of 4 would represent a 9% (4x2.25) difference between the tighter and looser constructions.

Deducting 9% of 300 gives the new needle width of 273 (300 − 300x.09). It is, of course, obvious that some modification of this result is required since not only must the total number of needles be an even number, but as each narrowing reduces the width by four needles, the difference between the starting and final widths must be divisible by four.

Deducting 9% of 300 gives a reduction of 27 needles, but this is not a possible solution since each narrowing represents the removal of four needles from the knitting operation and, therefore, 28 needles should be removed as this is the closest number divisible by four. The new needle width after all narrowings then becomes 272 (300-28). It is not necessary to show the calculations for the widenings to produce the heel pocket nor for the gusset or toe narrowings as exactly the same procedure as described above would be used for their determination.

Example Two

Problem: It was desired to make a 15 denier, 60 gauge number which was to be knit at the same courses per inch as a current 15 denier, 51 gauge construction, but with 8 instead of 4 flare narrowings. The question was what the stretch would do in the new construction using the desired number of flare narrowings.

Solution: The stretch of the known construction was 25.00" in circumference and since there is a change of from 5 to 6% for each change in gauge, the increase in stretch would amount to 16.5% (3x5.5). This amounts to 16.5% x25.00 or 4.13" so that before correction for the narrowing change, the theoretical stretch would be 29.13".

As the stretch changes by from 1 to 1.5% for each two needle narrowings, four additional flare narrowings would decrease the stretch by 5% (4x1.25) or 5.00% x29.13" which amounts to 1.46" so that the final stretch after all changes were made would be 29.13" − 1.46" which equals 27.76". When the new construction was actually made, the stretch equalled 27.50".

Example Three

Problem: It was desired to produce a stretch type 15 denier number on 51 gauge similar to an existing 60 gauge style.

Solution: The same approach used in the previous examples could not be used in this case as there was insufficient previous experience available on the effect of gauge, stiffness, or narrowing changes for the type of stretch yarn under consideration. It was, therefore, necessary to use the ratio method in solving this problem. Data was available for constructions using regular 15 denier yarn on both gauges and for the stretch yarn on 60 gauge. It was assumed that the same ratio relationships would hold for the two 51 gauge constructions as for those made on 60 gauge and the solution was worked out on this basis.

There are occasions as, for example, when experimenting with new types of yarn where no previous experience is available as a guide to help in the setting up of specifications. An example of such a special case would be the substitution of Type 6 for Type 66 nylon where the physical characteristics and the effect of heat setting are sufficiently different as to require material specification changes.

In such cases, it is suggested that the following procedure be followed:

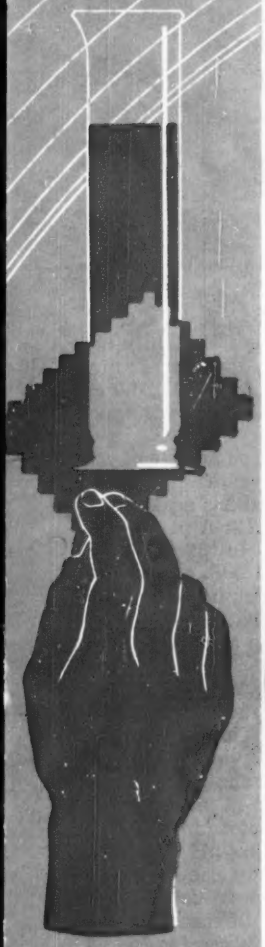
1) Set up two sections of the new yarn on a machine using the same denier, or as close as possible, of the regular yarn and knit about a dozen stockings. No tension adjustments should be attempted, but courses per inch should be accurately counted on both yarns.
2) If the system used by the mill calls for heat setting (preboarding prior to dyeing, stockings from both yarns should be processed on the same machine. Careful note should be taken of any differences in shrinkage and it will be helpful to make flat length measurements after heat setting.
3) Dye and finish both lots in the same dye machine at the same time.
4) If heat setting has already taken place, the stockings should be dried by whatever process is used by the mill with both lots being handled on the same machine with the same requirement being followed if a combined drying and heat setting process (Dunn System) is used. Flat measurements are to be made after this operation has been completed.
5) Make comparative stretch and fit tests by whatever methods are standard for the mill. It is recommended that a volumetric fit test be included. Stretch and recovery tests are also extremely helpful.

Methods for making all the above tests will be discussed in subsequent articles of this series.

The information obtained from the above tests should be sufficient to make possible the setting up of specifications for the new yarn. This procedure will eliminate the necessity of setting up an entire machine with the new yarn and then guessing what changes, if any, are necessary before anything about

(Continued on Page 54)

DYEING and FINISHING Section



BLEACHING
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PROCESSING

Help in Controlling pH

Here's a method of accurate pH measurement that insures better pH control in wet processing

By Lyne S. Metcalfe

pH Control Testing Set

THE WET PROCESSING of textile materials involves the use of solutions of varying degrees of acidity and alkalinity. It is necessary to regulate the acidity and alkalinity of these solutions for efficient processing, and to avoid possible damage from strong acids and alkalis. It is a simple but important matter for an operator to determine and maintain optimum pH conditions in these baths. Solutions must be used which are efficient, yet cause minimum damage to the material.

The degumming of silk and scouring of wool are accomplished at approximately pH 10.0. Cotton being less affected by alkalis than wool, can be scoured at values from pH 11.0 to 13.0. Synthetic fibers are more sensitive to alkali than cotton.

Dyeing of fabrics, bleaching with hydrogen peroxide, or hypochlorite, and removal of starch from cotton are all carried out at definite pH values for each process. Other processes, such as silk soaking, mercerizing of cotton and washing operations must receive the same careful attention to pH control.

Since the textile mill is dependent upon a supply of clean, soft water, the operator is interested in water purification and softening. When alum is used in water purification, the pH of the water must be adjusted to a definite point to give the most efficient action.

On the pH scale, a value of pH 7.0 represents neutrality. This means that if the material being tested has a pH of 7.0 it is neither acid nor alkaline.

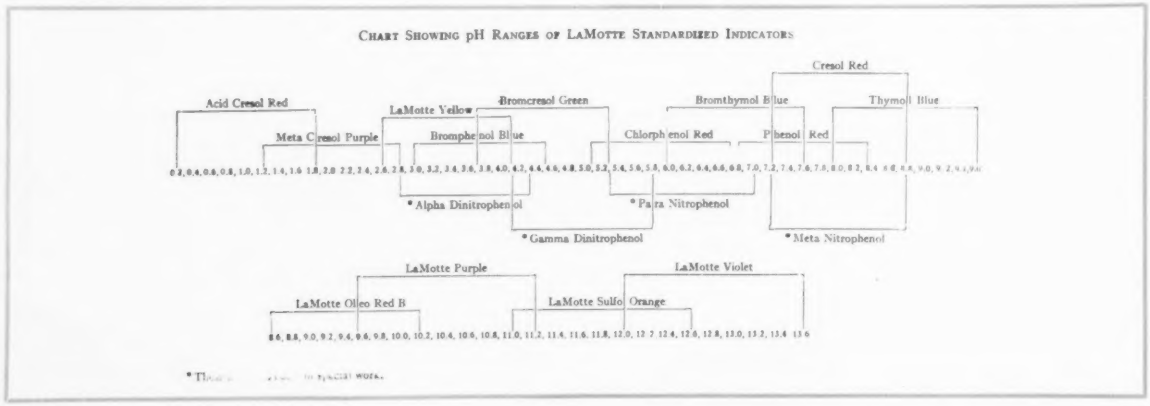
Any values higher than 7.0, such as 7.2, 7.4, 8.0, 9.0 or 10.0 denote alkalinity, the degree of alkalinity *increasing* as the numbers *increase*. Analogously, any values lower than pH 7.0, such as 6.8, 6.6, 6.0, 4.0 or 2.0, denote acidity, the degree of acidity *increasing* as the numbers *decrease*.

In order that the worker may have some idea of the degree of acidity corresponding to various pH values, it may be stated that a solution which has a pH value of 5.0 is 10 times as acid as one with a pH of 6.0. Analogously, a solution of pH 4.0 is 10 times as acid as one of pH 5.0. Thus pH 4.0 indicates an acidity 100 times as great as pH 6.0. A similar relationship holds on the alkaline side of the scale. That is, a solution which has a pH of 9.0 is 10 times as alkaline as one which has a pH value of 8.0.

This control method has been so widely adopted that the critical pH values which should be maintained in many processes have been definitely established. Since the significance of pH values and the means for changing a solution from one pH value to another are known, all that is required for a worker to know is how to make the actual determinations.

The use of pH indicators in making pH measurements is based upon the fact that the various indicators now supplied undergo a change in color when they are acted upon by solutions of different degrees

(Continued on Page 50)



Afraid of the slasher...when the slasher is dyeing?

There are no two ways about it—slasher dyeing is a troublesome piece of business. Without giving it a second thought, you expect a certain percentage of "seconds".

The question is—is your percentage too high?

IRC's Continuous Process Rayon has established a record of coming out of the slasher with fewer "seconds"—by far. It has a consistent record for picking up more dye, more rapidly and more uniformly.

Isn't it just good business, then, always to specify the yarn that isn't afraid of the slasher? The self-same yarn you count on for performance when you're running a "critical" fabric? IRC's Continuous Process Rayon!

I·R·C

INDUSTRIAL RAYON CORPORATION
CLEVELAND, OHIO

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Sales Office: 500 Fifth Avenue, New York 36, N. Y.

pH Control

(Continued from Page 48)

of acidity or alkalinity. Litmus is, no doubt, the simplest and best-known indicator of this kind, its color change being from red to blue—acid solution turns it red, alkaline solution turns it blue.

But, there are many degrees and grades of "red" and "blue" and their meaning varies greatly within the judgment of different persons reading them. The margin of error, it will be readily realized may be far too great when it comes to practical handling of costly industrial materials. Modern Indicators, on the other hand, record color changes over short ranges that are distinct to the average eye.

pH indicators with their ranges and color changes are:

Acid Cresol Red	0.2-1.8	Red-Yellow
Meta Cresol Purple	1.2-2.8	Red-Yellow
LaMotte Yellow	2.6-4.2	Red-Yellow
Bromphenol Blue	3.2-4.6	Yellow-Blue
Bromcresol Green	3.8-5.4	Yellow-Blue
Methyl Red	4.4-6.0	Red-Yellow
Chlorphenol Red	5.2-6.8	Yellow-Red
Bromthymol Blue	6.0-7.6	Yellow-Blue
Phenol Red	6.8-8.4	Yellow-Red
Cresol Red	7.2-8.8	Yellow-Red
Thymol Blue	8.0-9.6	Yellow-Blue
Lamotte Oleo Red	8.6-10.2	Yellow-Red
LaMotte Purple	9.6-11.2	Purple-Red
LaMotte Sulfo Orange	11.0-12.6	Pale Yellow-Deep Yellow
LaMotte Violet	12.0-13.6	Red-Blue

In using these modern indicators to determine pH control the procedure is simple. A quantity of the indicator solution is mixed with a measured quantity of the solution under test. The color of the indicator will change according to the pH rating of the solution under test and the degree of change is measured by matching against known pH color standards. When the nature of the material being tested is such that it cannot be tested directly, a simple extraction procedure is employed and the test is then carried out on the extract.

Each indicator has a distinct color change over its active pH range. Bromthymol blue, for instance, extends from yellow at pH 6.0 through various shades of yellowish green to blue at pH 7.6.

To accurately and quickly measure pH values with indicators, one uses for comparison a fixed series of reference colors accurately portraying the behavior of the indicator over its pH range.

Now to measure the color change of an indicator which has been added to the sample under test, the comparator is used and procedure is as follows:

Fill 3 marked test tubes to the mark (10 ml) with the liquid to be tested and place them in the holes marked B, A and C. To the middle tube—A add 0.5 ml. indicator solution from the bottle by means of the pipette and nipple. Then mix the contents thoroughly. Put tube of distilled water in the hole D and two of the color standards, differing only by 0.2 pH. For example, 6.8 and 7.0 in the two holes E and F.

Look through the three pairs of tubes then change the color standards as may be necessary until the *central* pair of tubes exactly matches one of the other pairs or until the color through the central pair lies between the colors of the pairs on either side. If an exact match is secured the pH of the test solution is read off directly from the standard with which the match is obtained.

If the color of the central pair of tubes lies between the colors of the pairs on either side, the pH value is taken as the average of the two. For instance, if it lies in between 6.8 and 7.0 the value is taken as 6.9. A piece of etched plastic is placed over the slots on one side of the comparator block to help in making accurate measurements.

Frank LaMotte, President, LaMotte Chemical Products Company, pioneers in the development of this method has this to say: "The advent of the practical system of pH measurement has proven to be one of the most important new tools available in modern times in the textile industry. These operations involved the treating of fibers of all kinds and in various combinations; hence, pH zones had to be established on a different basis in each operation. Only through proper pH control could the wet processes be efficiently run, both for the protection of the raw fibers and then their chemical treatment in manufacturing the finished goods. Once the proper pH was established for the handling of a specific product, the plant operations could then duplicate these conditions for continuous running."

Courtaulds Rayon Colors Get High Marks in Sunlight Tests

Coloray is being used in 7 different shades in upholstery for Chrysler Corp. cars for 1956, Courtaulds (Ala.) Inc. announced recently. The colors are red, green, blue, turquoise, grey, tan and black.

Courtaulds also reports that eight of their Coloray colors, out of a range of 19, are now colorfast to light up to at least 500 hours of direct exposure to the sun, according to independent tests conducted by South Florida Test Service on Courtaulds' solution-dyed rayon staple. The colors are Slate Grey, Silver Grey, Tan, Peacock Blue, Turquoise, Terra Cotta, Medium Brown and Black.

Courtaulds added that this new record goes beyond any known measurement for colorfastness, including the highest standard set by the American Association of Textile Chemists and Colorists, which is Class L8 or 320 hours' sun exposure.

Courtaulds further stated that one Coloray color, Hunter Green, is in Class L8 after sun tests both direct and under glass. Six colors—Dark Blue, Malachite Green, Indian Yellow, Red, Dark Brown and Sulphur Yellow—are in Class L7 (160 hours) as a result of direct sun tests, and four of these colors—Dark Blue, Malachite Green, Indian Yellow and Red —reached Class L8 (320 hours) after tests under glass, Courtaulds said.

The four other colors in the Coloray range, Medium Blue, Apple Green, Pink and Light Blue attained a rating of L6 (80 hours) after direct exposure tests. Three of these colors—Medium Blue, Apple Green and Pink were given an L7 rating after 160 hours of exposure under glass. Light Blue, normally noted for fading, earned Class L6 in tests under glass, a rating considered by the trade as exceptionally good, Courtaulds added.

Carding Tests

(Continued from Page 38)

4. Determine the % Fly by dividing the weight of the fly by the standard production of the card, from steps 2 and 3.
5. Determine any cards whose % Fly is in excess or below the allowable standard and tolerance.
6. Re-test any cards found off-standard. If it is again outside tolerances, the result should be reported immediately to the persons concerned.

Evaluation

A card with a high percentage of fly represents excessive removal of stock, most probably containing an undue proportion of spinnable fibers. A card with low fly represents inadequate carding and inadequate removal of trash, leaf, short fibers and neps.

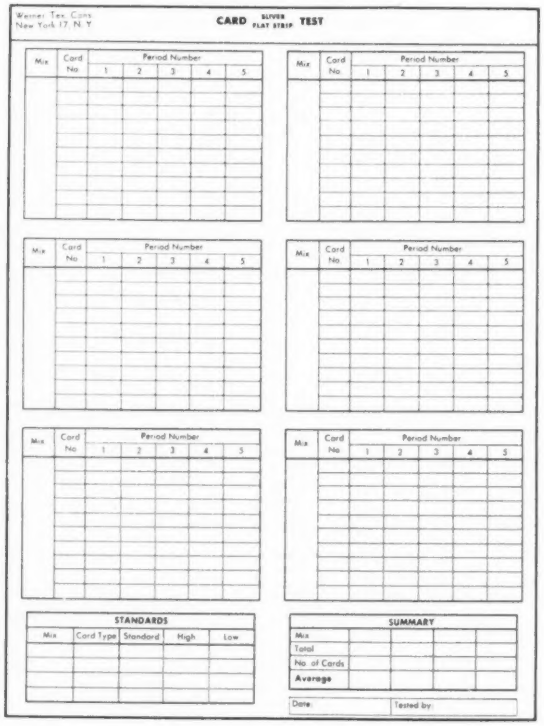


Fig. 5

CARD FLAT STRIPS QUALITY

Purpose

To test quality of flats as regards uniformity and carding action in the removal of short fibers, trash and neps.

Equipment

Grain scale, capacity 200, sensitivity 1 grain. Partitioned wire basket.

Sampling

Flat strips should be tested at a definite time in the stripping cycle, such as between ½ and 1 hour after stripping. Several adjacent cards may be selected for test. Ten specimens of five strips should be taken per card.

Procedure

1. Brush off front of first card in test, and remove strips.
2. Proceed to the next card, and so on, repeating step 1.
3. Stop as soon as 4 to 4½ strips have run off the first card.
4. Return to the first card, and break off the first five strips. Roll these into a ball and place into wire basket.
5. Proceed to the next card, and so on, repeating step 4.
6. Complete ten complete cycles on the cards.
7. Weigh each ball of five strips to the nearest grain and record. Where possible, permit to condition for three hours at 65% relative humidity and 70° F.

Evaluation

From the weights of the individual balls and the weight of 50 strips from each card, obtained as shown above, calculate:

1. Average weight of five strips per card.
2. Range between the highest and lowest ball of strips from each card.
3. Range from step 2, expressed as a percentage of the average, from step 1. This represents the flat strips variation in percent.

An excessively high average weight means that the card is removing an undue amount of spinnable fibers in the strips; while low average weight indicates inadequate removal of trash and short fibers. Excessive variation in flat strips indicates non-uniform carding action, with resultant uneven sliver and inadequately parallelized fibers. The latter will cause undue ends-down in roving and spinning, as well as additional nep formation in drawing after carding.

SLIVER CAN CONTENTS CHECK

Purpose

Where cans are not full, excess labor is created for doffers and creelers, and undue piecings become necessary. At the same time, over-full cans may cause detrimental pressure on stock and toppling over and soiling of sliver.

Testing Equipment: Platform scale, capacity 60 lbs., sensitivity 1 oz.

Procedure A, for Machines with Automatic Full Can Measuring Motions

1. Weigh two full cans to the nearest ounce.
2. Subtract the average weight of the type of can used from the full weight, giving the net can contents.

Procedure B, for Machines with Pressure-Type Can Knock-Offs:

1. Weigh one full can, taken from the delivery with the knock-off mechanism.
2. Subtract the average weight of the type of can used from the full weight, giving the net can contents.

Procedure C, where no Automatic Knock-Off is Used

1. Weigh ten cans, taken at random from a group of cans produced by one doffer-operator. Find the total weight of the ten cans.
2. Subtract ten times the average weight of the type of can used from the total full weight of the ten cans; and find the average net weight per can, by dividing the total net by ten.

Procedure D, Using Only a Wrist Watch

1. Determine the proper doffing cycle for the group of machines to be observed, by reference to time study and standards books.
2. While working near the machines on some other test, note the time the tenders begin to doff a given section of machines.
3. Note the time of the second doff on the same section. The elapsed time between the two doffs represents the doffing cycle, after allowing for lunch-stops, power failures or other stoppages.
4. If the doffing cycle has been established properly, and stock weight runs uniformly from the machines, cans produced from the proper doffing cycle also have the proper content in terms of pounds.

Evaluation: Note and report any deviations from standard in excess of 10% per can or 5% per group of machines.

CARD WEB NEP COUNT

Purpose

Neps are excessively curled fibers, assuming the appearance of white spots in the card web. By counting and controlling these neps within allowable limits, yarn strength and appearance grade is safeguarded.

Equipment

Nep counting boards, 5 x 7 inches, covered with fine black emery paper (or light tan emery for stock-dyed webs); plexiglass covers for each board, divided into inch-squares; rubber bands to hold covers on boards; and container as shown in Figure 3.

Sampling

Specimens are obtained by the technique shown in Figure 3. Usually, three specimens are required per card, one from the center and two from the sides. Sampling should be scheduled in such manner to occur, as a rule, about the middle of the grinding and stripping cycle.

Procedure

Mill management should determine for each yarn style and end use the allowable nep size, based on the photographic standards provided in Standard D-1446 of the American Society for Testing Materials.

The tester will then count only those neps which are in excess of the allowable size.

Care must be taken to omit leaf and naps from the count. Naps are fuzzy bunches of fibers, not curled tightly. These are usually evened out in the subsequent drawing, unlike neps which continue into the yarn.

Weigh each web on a grain scale. However, where skill has been developed in removing uniform webs from the card, an average grain weight may be substituted for individual weighings.

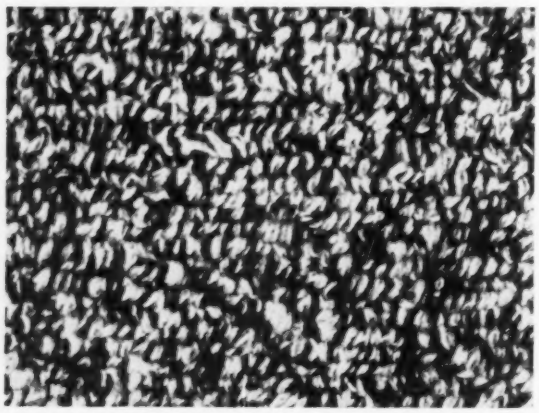
Evaluation

1. Find the neps-per-grain, by dividing the neps per board by the grain weight of the web.
2. Find the average and range of neps-per-grain for each of the three individual determinations per card.

Nep data accumulated by stocks and card groups will reveal where any changes in stock; opening, picking and carding settings, or maintenance frequencies may be required to maintain desired quality levels.

Solution-Dyed Carpet Rayon

Solution-dyed rayon staple fiber for carpets has been brought out by Hartford Rayon Co. in eight colors priced according to color from 43 to 55 cents a pound. Tradenamed "Kolorlok", Hartford's colored staple has a high degree of fastness to light and sun and outstanding fade resistance to wet and dry cleaning and on-location shampooing, Hartford reports.



Bigelow has used Hartford Rayon's new solution-dyed carpet staple in this tweedy floor covering of multi-level looped pile. Available in 12 and 15 feet widths, this fabric retails for $9.95 a square yard. Advantages of solution-dyed rayon in carpets are said to be high resistance to fading from sunlight, salt air and water and household cleaning chemicals.

Stains may be removed with chemical cleaners and bleaching agents used in homes without damage to the carpet's color.

Carpets made with the new solution-dyed staple were introduced at the Chicago market last month by Bigelow-Sanford Carpet Co., of which Hartford is a division. Bigelow showed two tufted carpets made with Hartford's new colored staple. One of them, "Maestro", was a multi-level looped tweed retailing for about $9.95 a square yard. The other, "Baton", was a loop pile tweed retailing for $6.95.

Hartford is offering the new "Kolorlok" staple fiber in 15 denier to other carpet manufacturers, taking and filling orders on a first-come-first-served basis. Two colors, brown and black, are available in bright staple. Other colors come in both bright and dull staple. These include gray, sandalwood, nutria, light green, mint green and champagne. Hartford expects the new colored staple to be specially adaptable for blending purposes as well as for use in 100% rayon constructions.

Hartford Licensed by Avisco

Hartford Rayon Co., a division of Bigelow-Sanford Carpet Co., Inc., has taken a license under American Viscose Corp. fiber patent Merion et al 2,517,694, which covers rayon crimped staple fiber. Hartford also has withdrawn the declaratory judgment suit regarding this patent brought against American Viscose Corp. At the same time, Bigelow-Sanford is making available to American Viscose a license, with the right to grant sub-licenses, under certain Bigelow-Sanford patents in the textile field.

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Hosiery Specifications (Continued from Page 46)

its actual behavior is known. Once the information outlined above has been obtained, any changes in specifications which may be necessary can be made by the methods previously described.

While this article has been almost exclusively devoted to the problems and mathematics of full fashioned hosiery specifications, the principles established can be equally well applied to specifications for stockings to be produced on circular (seamless) machines.

	60		51	
	Regular	Stretch	Regular	Stretch
I. Narrowings and Needle Widths				
Needles at Start	560	560	476	476
" after Flare Narrowings	528	496	460	? *
Ratio Stretch to Regular	.940		? *	

* Multiplying the 460 needles after the flare narrowings in the regular construction by the 1940 ratio gives a figure of 432.4. Since only an even number can be a possible solution, 432 should be tried. This figure deducted from the 460 needle width would provide for a reduction of 28 needles and this is mathematically sound as it can be made by seven four needle narrowings.

Needles after Calf and Flare Narrowings	332	320	300	? **
Ratio Stretch to Regular	.964		? **	

** If the 300 needles in the regular construction are multiplied by .964, the result would be 289.2, but 289 cannot be the correct answer as it is neither an even number nor is the difference between it and 432 (143) divisible by four as it must be. The choice must then be made between either 288 or 292 needles either of which would satisfy the mathematical requirements. 292 was chosen as it is generally desirable to start with more rather than less stretch when a choice is offered.

The same method would be used to determine the balance of the narrowings and the heel widenings.

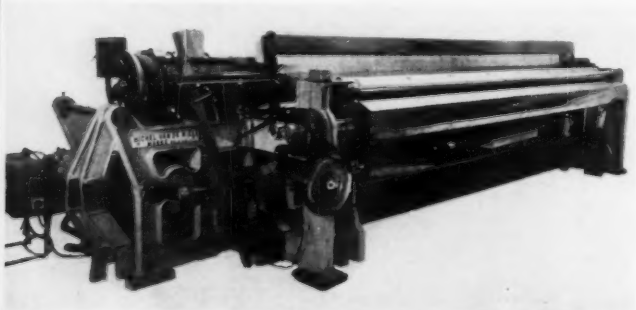
II. Courses per Inch and Total Courses				
Courses per Inch	52	52	50	50
Total Courses Start Main End to end Widenings	1386	1366	1376	? ***
Inches—Total Courses divided by Courses per Inch	26.65	26.26	27.52	? ***
Ratio Stretch to Regular	.985		? ***	

*** 27.52 multiplied by the .985 ratio gives us a figure of 27.11 which when multiplied by 50 (CPI) results in a total of 1355.5 courses. Since the total courses should be an even number, 1356 would be used. A further check must be made if the type of stretch yarn being used requires two carrier operation. In this case the total must be divisible by four to allow completion of the carrier operating cycle. 1356 also satisfies this requirement and was used.

The same method was used to determine the courses per inch and the total.

Van De Wiele Broad Looms

American Safety Razor Corp. will sell and install Van De Wiele looms in the United States and Canada, according to a recent announcement. The looms are made in Belgium by Michele Van De Wiele S.A. American Safety Razor has set up an industrial products division at Staunton, Va. under David M. Nason to handle distribution of the looms. The Belgian company specializes in carpet, tapestry and jute looms. Van De Wiele looms distributed by American Safety Razor will vary in size up to a 26-ton model for weaving carpet 15 feet wide. Others will be available for weaving jute backing for tufted carpets in 168 and 210 inch models.



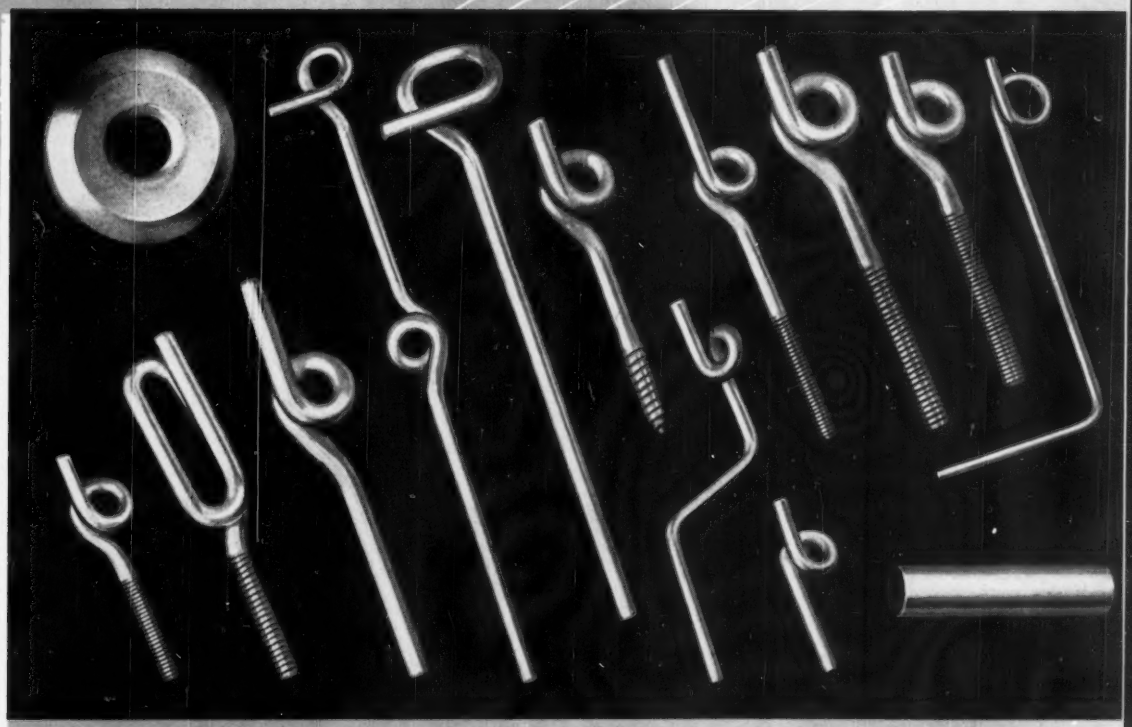
New 3-Dimensional Fabric

A new fabric which is woven flat but is said to become permanently three-dimensional when dipped in boiling water has been introduced by U. S. Rubber Co. The new fabric utilizes a method of manufacture in which shrinkage is purposely used under controlled conditions to achieve new patterns and textures, as well as a third dimension, depth.

Its first use, according to the company, will be as an upholstery fabric where the cushioning effect of its three-dimensional structure will permit free circulation of air between the person and the seat, thus promoting comfort.

Woven on an ordinary loom with polyethylene yarn and conventional textile fibers, the fabric, called Trilok, forms puffs when the polyethylene is shrunk by boiling water in a matter of seconds. The polyethylene, running lengthwise in the fabric, is said to shrink as much as 55 percent, while the fabric may be from 1/64th to 1 inch thick.

Engineering Section



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Textile News Briefs

New Whitin Atlanta Office

The Atlanta, Ga., office of Whitin Machine Works has been moved to a new building at 728 Spring St., N.W. Whitin was formerly located in the Healey Building on Forsyth St. The new building provides more modern and larger office facilities for Whitin's textile machinery sales and service offices as well as facilities for Whitin Business Equipment Corp., a recently organized subsidiary of Whitin Machine Works.

Carpet Manufacturer Expands

James Lees and Sons Co., carpet manufacturer, is planning an expansion program that will cost $6,000,000, one-third of which will be spent on tufted carpet facilities.

"Tufted carpet offers a great potential in the year ahead," J. L. Eastwick, president, asserted, "and Lees productive capacity will be increased by 10% in the first half of 1956 and an additional 20% by late next year. Another 35% will be ready by the end of the first quarter of 1957."

Mothproofing Film Offered

Geigy Dyestuffs, Division of Geigy Chemical Corp. has released for free distribution to schools, community groups and TV a new film, *Insects Astray*.

The 26-minute film, using photomicrography and an original symphonic score, shows development of the webbing clothes moth from egg to adulthood. Other species of wool-eating insects are also shown. Colorless synthetic dyestuffs that have an affinity for wool and the ability to kill moths are given as the solution to wool-eating pests. To get copies of the film for screening, write to Mitin Dept., Geigy Dyestuffs, 89 Barclay St., N. Y. 8, N. Y.

Ideal Builds New Plant

Ideal Industries Inc. and Ideal Machine Shops, Inc., Bessemer City, N. C., will build a new office building of brick window-less construction with 16 inches of glass brick to furnish light. The present administrative office will be modernized to conform with the lines of the new one. Ideal Machine Shops office and the Ideal engineering department will remain in their respective buildings. Laboratory and pilot plant will be expanded and moved from its present quarters to new ones in the Ideal Industries building.

Courtaulds Adds Coloray Colors

Three colors have been added to the color range of Courtaulds' solution-dyed rayon staple, Coloray. They are terra cotta, medium brown and hunter green. Available in 1½ denier, 1 9/16" staple, and 3 denier, 2" staple, terra cotta is offered at 39¢ per pound; medium brown, 39¢; and hunter green at 49¢.

Heresite Expands Plant

Heresite & Chemical Company of Manitowoc, Wisconsin, recently completed a new one-story, 12,000 square foot addition to their plant. The new addition will be used to expand the facilities for the manufacturing and application of Heresite baked phenolic coatings and Herecrol synthetic rubber. This is the seventh addition to the company since its inception and also marks the company's 20th anniversary.

Electronic Controls on Variable Speed Range Drives

by C. E. Robinson and R. J. Farrell*

Electronic controls increase the efficiency of variable speed drives in textile plants. Here is a broad report on how these devices work

MOST MACHINES used in the production of cotton or wool fabrics are driven at constant speed from a common line shaft or by an individual a-c motor. In the case of these machines, or processes, no apparent economic advantage presently exists for the substitution of controlled adjustable-speed drives. Future technological advances may well change this picture. Certainly, a great deal of thought has been given to process integration and the use of adjustable-speed drives on some individual operations such as spinning. There are a number of machines used in the production of textile fabrics where the use of controlled drive functions has already become accepted practice, such as the warper and the slasher.

A much greater use of controlled drive functions has been made in the finishing end of the industry where bleaching, printing, dyeing, and finishing ranges, all with sectional drives, have grown in complexity from two or three sections of three decades ago to the modern giants of twenty or more high speed sections.

The development of these complex range systems has posed problems for all technical personnel involved—process, chemical, hydraulic, mechanical, architectural, and electrical. Before the advent of the complex integrated systems, each engineering function could be treated more or less as a separate consideration, but the integrated system demands a much greater study of the relationships between the various controlled variables. In the textile industry, the prime function of the electrical engineer was simply to provide adequate power to drive the machines. Now, he must not only provide that power, but must also provide suitable facility to control the machine functions in relation to adjacent machines or other factors such as temperature, pressure, and humidity.

The increasing use of synthetic fibers used alone or in combination with natural fibers has greatly aggravated the problem of machine control. In order to fully realize the potential of these man-made fibers in the highly competitive field of fashion as well as in the growing industrial field, the ingenuity of textile engineers will be put to the test. And the electrical engineer, whose ingenuity will probably be taxed to a greater extent than the others, should be thoroughly familiar with all available tools of his trade.

Most electrical engineers in the textile field have already had enough experience with the adjustable voltage direct current system of control to be familiar with its advantages. Primarily, these lie in the fact that the system permits control of the speed of a motor or group of motors over a wide operating range by controlling the excitation of the generator supplying armature circuit power. Where a group of motors is involved, such as would be the case with a range drive, one motor may be chosen as the lead or master motor, and the other motors made to follow it by means of dancer roll actuated vernier rheostats controlling the excitation of the individual motor shunt fields. All of the functions of such a drive system are obtained by control of relatively low power circuits, which is easily obtained by means of rheostatic control devices maneuverable by the operator or by remotely controlled servo motors. Thousands of these adjustable voltage systems are in use today and are recognized as reliable, flexible drive systems.

In order to more completely realize the potential advantages offered by an adjustable voltage control system, it has been found expedient to employ one of the newer tools available to electrical engineers—electronic excitation control. As indicated earlier, the adjustable voltage system permits the operator to control large blocks of power with rheostatic devices requiring relatively little effort to operate or adjust. Substitution of the electron tube for the rheostat permits control of large blocks of power with virtually no effort, making it possible to have the drive functions made immediately responsive to extremely feeble signals generated by devices designed to sense temperature, pressure, humidity, speed, torque, etc. The drive functions may be made to respond to any controlled or uncontrolled variable for which a sensing signal can be produced.

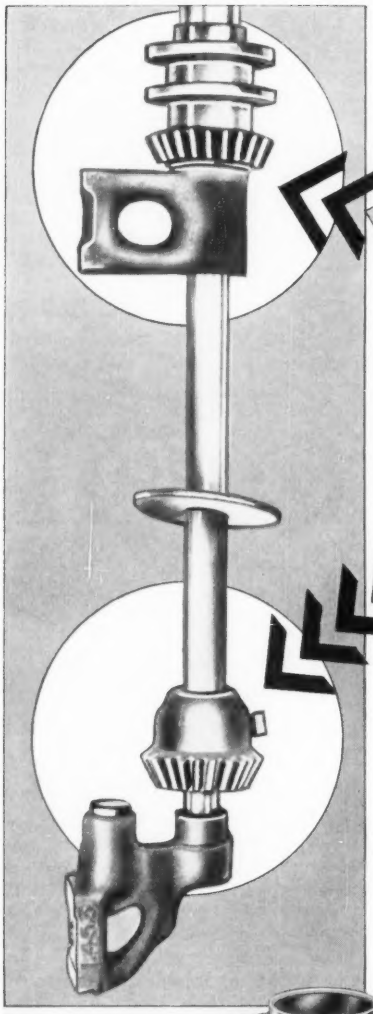
Electronic Excitation

Electric excitation devices fall into two basic types. The first is the simple uncontrolled rectifier which converts alternating current into direct current at a fixed potential. Functionally, it simply replaces the conventional rotating exciter used in adjustable voltage systems to supply constant potential excitation to the shunt fields of the motors and generators, and to the magnetic control devices such as contactors and relays. Its advantage lies in its mobility, its lack of moving parts, and the ease with which it can be maintained.

The second type is the controlled output rectifier and is the one with which we are primarily concerned. By controlling the grid of the thyratron rectifier tubes by any one of several methods, the firing point of the tube may be changed and the

(Continued on Page 60)

* Reliance Electric and Engineering Company Cleveland, Ohio.



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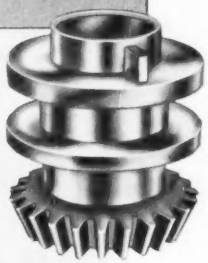
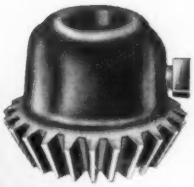
Quality of your production depends on these Bobbin and Spindle Gears.





These high-speed Bobbin & Spindle Gears are vitally important to the quality-conscious mill. If they do not mesh properly, uniform bobbins and even-running work are impossible. Your best replacement source is Saco-Lowell, where every gear is manufactured to the original specifications. The tough outer surface of the gears assures accurate, trouble-free operation—their quality is guaranteed by Saco-Lowell and unequalled at any price.

Substitutes **actually cost more** than genuine Saco-Lowell Bobbin & Spindle Gears. Cost-conscious mills must recognize the **high** replacement factor of these "foundry" gears. Their inferior manufacture, under normal high-speed operation, results in increased wear to these gears and other component parts.

Remember, the **initial price** for Saco-Lowell gears is competitive with any other make — in the long run they cost far less.

Ask your Saco-Lowell representative for the facts — he'll prove that **"It Pays to Use Genuine Saco-Lowell Repair Parts."**

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Drives

(Continued from Page 58)

effective output voltage changed accordingly. This voltage impressed on the shunt field of a generator or motor can thus control the excitation of the machine in response to adjustment of the grid control.

Basic Regulator

Consider the control system shown schematically in Fig. 1. By controlling the input voltage

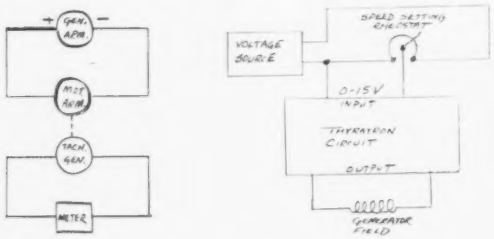


Fig. 1

to the thyratron circuit, the operator may control the output voltage of the generator and consequently, the speed of the motor driving its load. A visual indication of actual motor speed is afforded by means of the tachometer and speed indicating meter. The block diagram for this system is shown in Fig. 2. By watching the meter and adjusting the speed setting rheostat when required, the operator

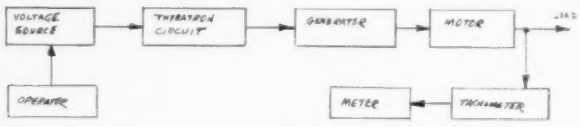


Fig. 2

could maintain the motor speed reasonably close to a desired value. However, such a system is not satisfactory where frequent speed changes are required or where continuous maintenance of a given speed is desired.

Compare this system with the one shown in Fig. 3. Note that the operator has been short circuited

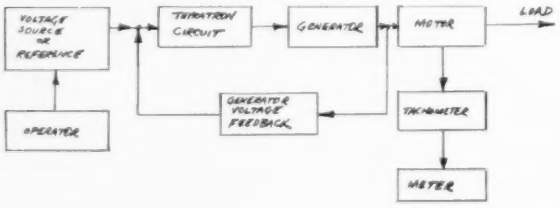
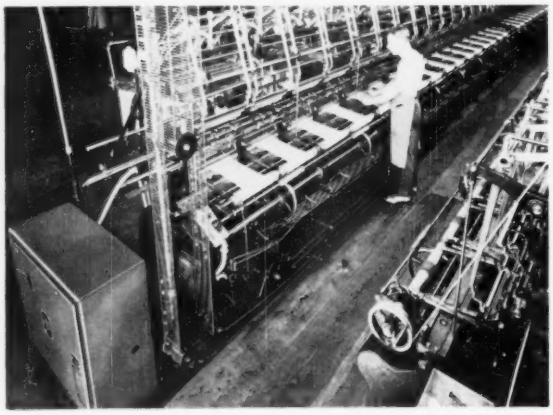


Fig. 3

by a direct connection from the output of the generator armature to the output of the voltage source. The input to the thyratron circuit is now the difference between the desired voltage or reference and the actual generator voltage. This difference signal is termed an error signal.

This, then, is a closed-loop control system with the thyratron circuit acting as a regulator. Such a system is an error sensing system actuated by the error between the reference or desired value and the feedback or regulated quantity. As long as a deviation from the error signal exists, the regulator acts to correct the situation continuously. The operator's function is to set the generator voltage to produce a desired speed, letting the regulator maintain this speed, while he is free to perform other duties.

With a simple regulator of this type applied to a generator having a normal voltage regulation of 10 percent due to load changes or field heating, this voltage regulation can be reduced to 1 to 2 percent.



Electronically controlled drives of the type described in this article provide the various speeds required in the different stages of knitting

Hosiery Knitting Machine

In the knitting of full fashioned women's hosiery, several preset operating speeds of the knitting machine are required for the production of each stocking. In order to maintain consistent quality in the product it is desirable to make the transfer between these preset speeds quickly and accurately.

One means of accomplishing this is by the use of adjustable voltage system with a generator voltage regulator. The block diagram of this system is shown in Fig. 4. Potentiometers are provided as

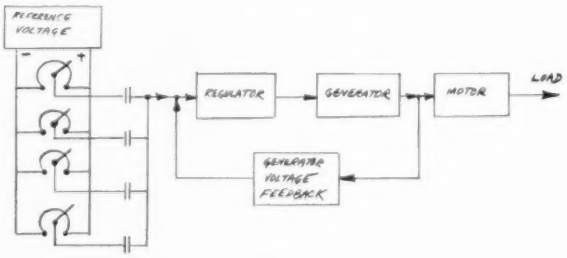


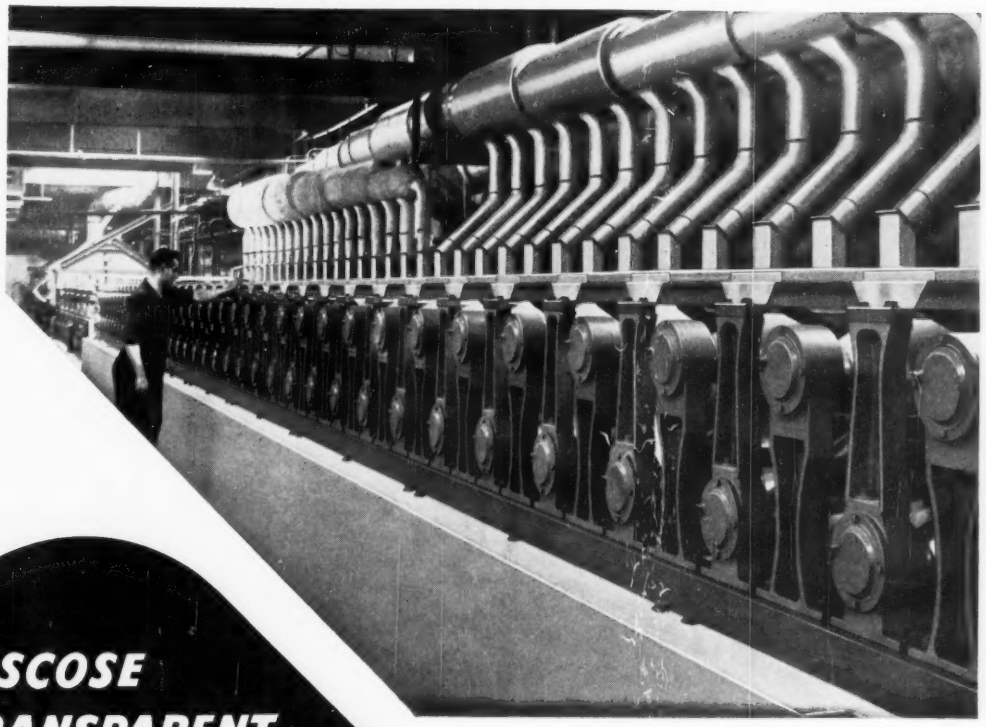
Fig. 4

part of the electronic panel for the individual selection of the preset reference voltages corresponding to the preset machine speeds required. Selection of the preset machine speeds is accomplished by means of machine-mounted limit switches.

The use of the electronic regulator in this case provides a means of improving the steady state and transient characteristics of the drive system as well as providing a versatile method for selecting a multitude of preset operating speeds.

(Continued on Page 72)

Photograph by courtesy of Transparent Paper Limited, Bury



VISCOSE TRANSPARENT *film* . . . *at 5 feet a second*

INCREASED PRODUCTION

Designed and manufactured in close collaboration with the industry, Dobson & Barlow's new Viscose Transparent Film Machine, shown here in operation, produces 59" wide film in 1,000 lb. finished reels at 300 feet per minute. A number of these machines are being supplied to the Bridge Hall Mill of Transparent Paper Limited, Bury, for their re-equipment programme. These high production figures are made possible by 8-pass treatment tanks, greatly accelerated cylinder drying and improved reel tensioning.

IMPROVED QUALITY WITHOUT WASTE

Specially prepared roller surfaces, a new drying system and the careful attention given to the finish of all contact parts ensure exceptionally smooth film of regular thickness, and virtually no waste.

NEW PROCESSING ECONOMIES

An oil-immersed gear box drive to each treatment tank, better glanding of rollers, protection against corrosion, and general machine accessibility make definite economies in maintenance costs.

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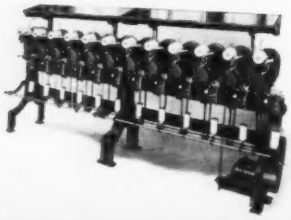
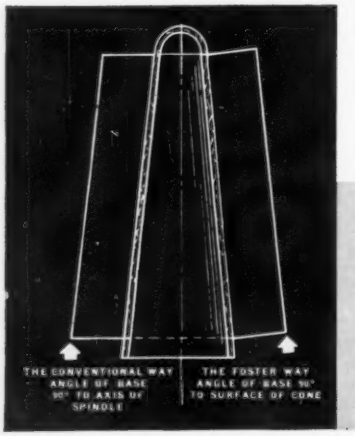
BANISH TWO ENEMIES OF GOOD RAYON KNITTING

NIP-I-TIS — unsightly tight stitches in knitted fabrics — is caused by catching of the yarn on the base of the cone as it delivers to the needle. The Foster Model 75 cone prevents it, because the angle of the base is wound at 90° to the *surface of the paper cones*. Thus each layer of yarn at the base is laid in a progressively higher horizontal plane, so that it can not drop down and "nip" the layer underneath.

SLUFFING — Creeping of the yarn towards the nose of the cone, so that it comes off in bunches — occurs most frequently when a cone is wound in the conventional manner, — with the angle of the base at 90° to the *axis of the spindle*, producing an *upward* pressure. The Foster Model 75 Cone practically eliminates sluffing because the angle of the base — 90° to the surface of the paper cone — produces a *downward* pressure.





Banish these two enemies of good rayon knitting. Install Foster Model 75 Winders or specify Foster Model 75 Cones.

FOSTER MACHINE CO., Westfield, Mass., U.S.A.

Southern Office, Johnston Bldg., Charlotte, N. C.;
Canadian Representative, Ross Whitehead & Co., Ltd.,
1475 Mountain St., Montreal, Que. and 35-37 King St. West, Toronto
European Representative: Muschamp Textile Machinery Ltd., Keb Lane Bardsley, Oldham, England

FOSTER MODEL 75

FOR WINDING NYLON, RAYON, SILK AND COTTON THREAD YARNS

George W. Borg

(Continued from Page 31)

And there has been something seemingly miraculous in Borg's success in knitting pile fabrics. Here was a man who knew nothing about fabrics or textile manufacturing, who had spent a lifetime in the nuts-and-bolts world of clutches and other unglamorous and grease-coated auto innards—and this man has succeeded in producing an altogether new kind of pile fabric whose beauty and luster make lamb skins look crude and beavers look to their laurels!

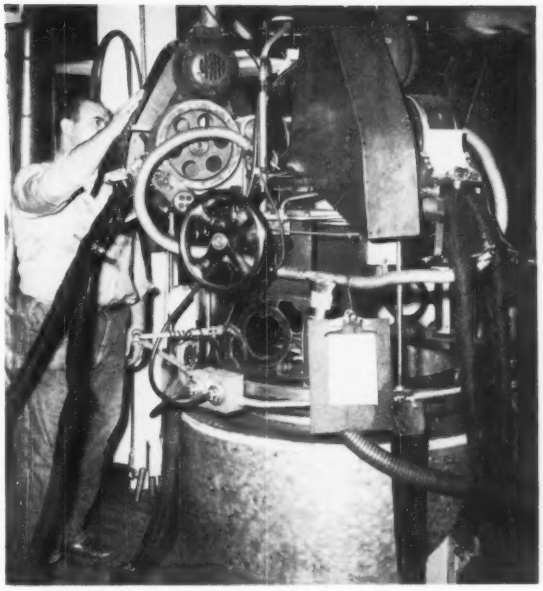
The creation of the Borg Fabric Division was not, however, a miracle. It was the result of hard work and inspired thinking by an industrial genius and his devoted staff of engineers and researchists. From knitting buffing pads the company went on to paint roller fabrics. Borg's paint roller coverings of Dynel and nylon performed better than the earlier rollers covered with wool. Borg's fabric on paint rollers probably did more for the rapid acceptance of this new and more efficient method of applying paint than any other single factor. The fabrics which Borg and his men developed for paint rollers did not mat down; they had the density of pile to allow them to carry a useful load of paint; and they had the quality of distributing the paint evenly on the receiving surface. They were also easily cleaned and stood up to long hours of use.

As Borg and his team of engineers—none of them were textile men—learned more about producing pile fabrics of the newer man-made fibers, the more excited they became about the possibilities of the new techniques they were developing. Why not, they boldly dreamed, produce knitted pile fabrics that would serve in apparel functions wherever fur has been used? Why not knit fabrics that will have the beauty and durability to rival fur in the preferences of fashionable women?

Borg himself did nothing to deter these wild dreams. In fact, he aided and abetted them with all the energy and skill he could muster. Along with enthusiasm and the guidance of his own industrial genius, Borg provided the substantial flow of capital needed to create a whole new technology. Borg is a wealthy man, and he was willing to lay out the large sums necessary to finance the development of new finishes and new machines.

His willingness to invest money lavishly in the Borg fabric venture is undoubtedly one of the major reasons for its success. It was all, of course, risk capital with emphasis on the risk. "We have layed out seven or eight millions to get the Borg Fabric Division where it is today," he says. "Large sums have and will continue to be invested in research—both in products and special intricate manufacturing equipment. In the future, we expect to make equally important progress. Patents have been applied for, both on products and equipment, and are receiving favorable action and are beginning to issue, and patent suits are already under way, and much patent litigation may develop."

Borg accepts this need to carry on expensive reseach without letup as part of the things he wants to accomplish in his fabric manufacturing just as he accepts the need for the investment of large sums of capital. "I am in this business," he says, "on one basis only: Borg has got to be the leader. Our pile fabrics have got to be the best. To maintain this lead, I know that we must lead in research and development, and I intend to do so."



One of Borg's specially constructed circular knitters for producing pile fabrics in operation at the company's plant at Delavan, Wis. The stock-dyed roving comes from spools on stands set on the floor around the machine. The roving passes into miniature cards shown on the periphery of the machine. After passing through the cards, the fiber is knitted into the backing fabric to form the pile surface. Above the machine, as on a conventional circular knitter, are the cones of yarn for the backing cloth.

From paint roller fabrics, the Borg Fabric Division soon found itself making fur-like fabrics for collars and linings for storm coats and similar outdoor garments; for slipper trim; glove linings; stadium boots, and many other end uses where an easily cleanable, durable pile fabric was wanted for warmth and good looks.

Borg's ambition to produce a synthetic pile fabric that could compete with fine animal pelts in the flossy world of high fashion came true a few seasons back. His Borgana—knitted of Dynel and Orlon and finished to resemble sheared beaver was tried out by a few leading coatmakers. The fact that these coats looked like fur, but were lighter, more comfortable, required less care, and sold for far less, soon caused a rush of buying. This winter Borgana coats have surged forward to a new height of popularity. While coatmakers clamor for fabric to increase their output, retail stores clamor for faster and bigger shipments. The coats, they say, are moving out of the stores as fast as women can put down their money and carry them off.

Not content with the success of Borgana, Borg this winter brought out a new and even furrier fur-like fabric. This is Borglura which was introduced to the public last November in a limited number at Stevens in Chicago. Borglura is made with Goodrich's new dinitrile fiber, Darlan, and George Borg is rightfully proud of it.

"There have been times," he says smiling, "when the request of my engineers and development men for more and more money to improve our machines and finishing techniques have frightened me a little. But when I can see results like these," he adds, running his hands lovingly across the lustrous deep pile of the new Borglura cloth, "all my doubts vanish and I am convinced that we are on the right track."

(Continued on Page 65)

HERECROL

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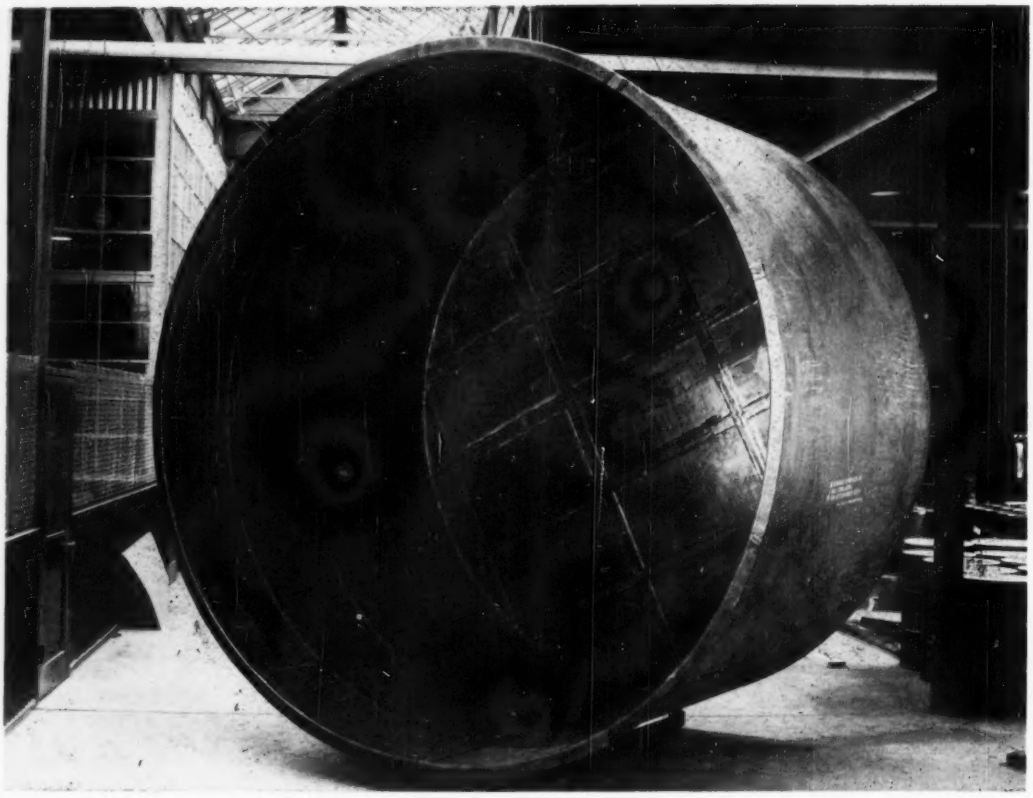
Self-curing SYNTHETIC RUBBER SHEET LINING



The CARBON STEEL TANK shown above was HERECROL lined in our shops and later installed in a Wisconsin Paper Mill for liquid alum storage. HERECROL Sheet Lining is available in ⅛" and 3/16" thickness. Application may be accomplished in the field as well as in our shop. The following is a selection of solutions which can safely be handled in HERECROL lined equipment:

ALUM SOLUTIONS • AMMONIA SOLUTIONS
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The HERECROL Self-Curing Synthetic Rubber Sheet Lining can be applied to steel tanks and other equipment unlimited in size. The reason for this is that no special equipment to provide heat or pressure is required. Storage tanks, processing vessels, tank cars, trailer tanks, pipes, fans, blowers, and duct systems have been successfully processed.

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Manitowoc, Wisconsin

Branch Office: 327 South LaSalle Street, Chicago, Illinois

George W. Borg

(Continued from Page 63)

The truth is that George W. Borg—old Mr. Clutch himself as they call him in Detroit—is deeply in love with the textile and apparel business. "When you reach my age," he says, "you need some creative, really stimulating work to keep alive your zest in living. When you are older, creative work is most rewarding and most stimulating—it makes one's old age interesting. That is what this deep pile knitting business has done for me.

"Another rewarding aspect of this business is that you can get results quickly, and see the results with your own eyes often in a matter of hours. For example, you make some changes in a knitting machine and you can soon judge whether results are better or worse. In the auto business, it takes years sometimes to find out whether you are on the right track in development work." And then again, Borg points out, in textiles the products are rewarding in that they are beautiful to look at, pleasant to touch.

"No business that I have been in during my life," he says now, "interested me as much as textiles do today. I find this business fascinating. It has challenged and stimulated me as nothing I have done since those days, long ago, when I worked to make the Borg clutch a trustworthy mechanism. All the excitement and sense of achievement of those years have come back to me in our work developing deep pile fabrics of man-made fibers.

The pile fabric comes off the knitter in circular form. Here it is being slit and opened so as to lie flat. The depth and looseness of the pile can be noted clearly here before the fabric has been sheared and put through other finishing steps.

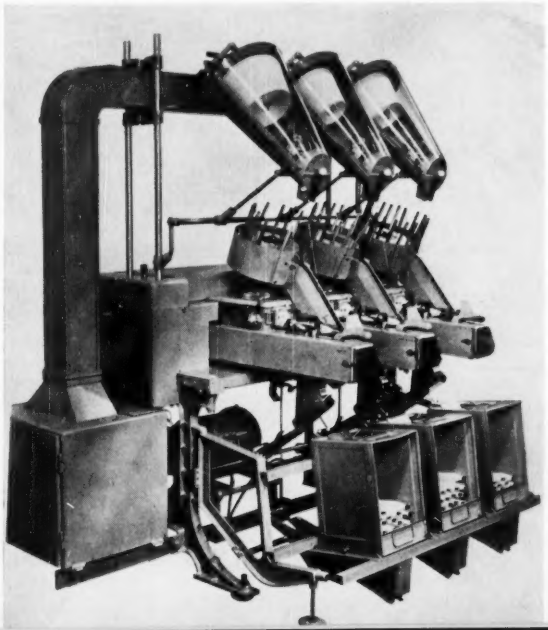
"Who would have thought," Borg adds with a big grin, "that George W. Borg, old Mr. Clutch himself, would some day be reading Vogue and keeping up on women's fashions! But I am and I love it!"

Whitin's New Winder Said To Speed Output, Cut Costs

A new automatic filling winder called the "Fill-Master" was announced recently by Whitin Machine Works, Whitinsville, Mass. The new machine is an addition to the line of Whitin Schweiter Model MS and Speed-Matic winders already available.

The Whitin-Schweiter Fill-Master Winder has many new features, the manufacturer reports. Among these features are a dust exhaust system for every winding position, resulting in dust and dirt free conditions around the winder. Bobbins are tailless wound, eliminating scissors and tail cutters. An unusual variable traverse layer locking mechanism produces firmly wound bobbins with a minimum of tension, avoiding sloughing in the shuttle, Whitin reports. Depending upon the type of yarn run and the bobbins used, this winding unit will run at spindle speeds up to 10,000 r.p.m., according to the manufacturer.

3-Spindle Whitin-Schweiter Fill-Master Winder



The new Whitin-Schweiter winder is said to be versatile and adaptable to a wide range of winding conditions with economical production costs. All types of yarn can be run on it including cotton, wool, worsted, or synthetics from coarse to fine counts. When different yarns are run, the tension is the only element that has to be adjusted. Bobbins are uniformly parallel, and spindle speed is adjustable on each individual winding position and covers a very wide range of speeds. The winder can be very easily adjusted to wind bobbins up to $10\frac{1}{8}$" in length and the bobbin diameter is likewise easily changed by a simple positive control.

Whitin also states that the new Fill-Master Winder is virtually completely automatic in operation. It can be equipped with a high speed bobbin loader. Filled bobbins can be either dropped on the pin boards underneath each individual winder unit or automatically packed into a loom box under each unit. Machine cleaning is materially reduced by the efficient dust exhaust system and maintenance is consequently reduced to very low levels.

The new Whitin Winder is manufactured by Whitin Machine Works under license from Schweiter, Ltd., Horgen (Zurich) Switzerland. Sales and distribution of the new machine will be handled in the ordinary manner by the existing Whitin sales organization. In addition, the H. J. Theiler Corp., Whitinsville, and Spartanburg, S. C., will act as special sales agents in the U. S. and Canada.

5 BIG REASONS for using PENFORD GUMS in your

WARP SIZING OPERATIONS

1. The clarity of the Penford Gum films provides a minimum of masking on colored warps for fabrics which are not desized in finishing.

2. The strong flexible films of Penford Gums provide improved abrasion resistance insuring maximum weaving efficiency.

3. The unusually strong adhesion of Penford Gum films to natural and synthetic fibers of all types minimizes shedding and eliminates fiber mats at the drop wires and fuzz balls on the yarn.

4. The improved film flexibility of the Penford Gums enables excellent weaving of synthetics and natural fibers at lowered relative humidities.

5. The improved flexibility and adhesion of the Penford Gum films has in some instances reduced the necessity of adding certain sizing adjuncts.

Penick & Ford has a staff of Technical Sales Service Engineers to show you the where, when, and how of using Penford Gums with all types of equipment. PENICK & FORD, LTD., INC., 420 Lexington Ave., New York 17, N. Y.; 1531 Marietta Blvd., Atlanta, Ga.; 18 California Street, San Francisco 11, Calif.; Cedar Rapids, Iowa.

Penford Gums

(U. S. Patent Nos. 2,516,632; 2,516,633; 2,516,634)

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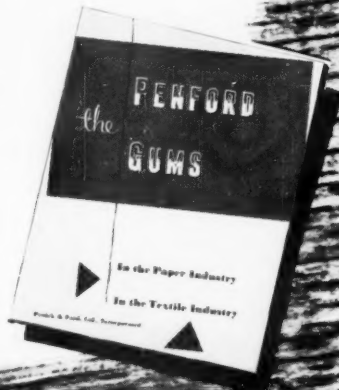

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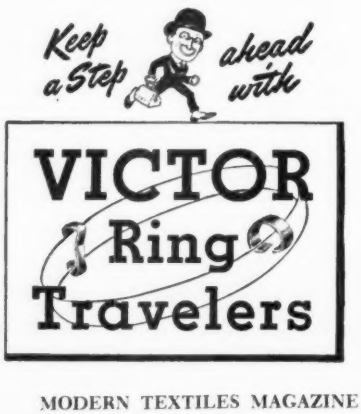
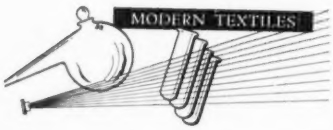




Report from JAPAN

By B. Mori

Quotas Solve Nothing — *OSAKA*— No one really believes that quotas now in effect on exports of Japanese cotton textiles to the United States are "satisfactory" to the Americans whom the Japanese wish to "appease." No one has attempted to hide that quotas are a political expedient, meant to forestall import restrictions in the American Congress. And, finally no one really believes quotas are more than a temporary measure. There is the feeling here that the U. S. market could easily absorb much more Japanese merchandise of all types including textiles without hurting American industries. But it is generally agreed that such exports would have to be diversified, and the increase gradual to avoid stimulating American fears. The Japanese also believe that the selling of such increased exports to the U. S. would have to be handled with intelligent smoothness, and not with the heavy hand that makes enemies.

The figure of 150,000,000 square yards upon which the Japanese interests (represented in the Textile Export Council) finally agreed is, in a sense, unimportant. What is important is that it was about 25 per cent above the level at which they had agreed initially the quota might be set. The increase, it was argued, was made necessary by the large volume of contracts already concluded for 1956 shipment. But the unwillingness here to create "difficulties" for exporters did not seem to sit well with the assertion that the quota figure represented a "sacrifice" on Japan's part.

Obscured by all the words was the fact that, without a quota, exports of cotton goods to the United States might have reached a quarter-billion yards in 1956; and that the figure might have reached half a billion within five years.

Quotas for Textile Products — The Council simultaneously set a quota of 2,500,000 dozen blouses for the U. S. for 1956—lower than expected, but still high enough to draw cries of protest from American competitors. It appears, too, at this writing, that quotas will be set on other manufactured textile articles such as pillow cases and sweaters. It is also apparent that the Government is keeping a close watch on shipments of other items, ranging from jackets to aprons, to see that no one becomes so large as to raise another furor like that of the "dollar blouse." At the same time, export quotas for Canada are under consideration, partly to quiet mounting opposition there and partly to avoid trans-shipment of goods via Canada to the U. S., in circumvention of the quota.

New Acetate Plant — The Matsuyama acetate plant of Teikoku Rayon Co., Ltd. (Japan's pioneer rayon manufacturer) is now in production, with a rated capacity of 5 tons of filament per day. It was built, as reported previously in this letter, with the technical assistance and processes of the European Bayer interests.

Plant for Yugoslavia — Completion of shipment of machinery for a $25,000,000 rayon and cellophane plant in Yugoslavia represents a triumph of international financing and technical cooperation, as well as a moral triumph for the "backward" technology of Japan. The two Japanese manufacturers made machinery according to American patents of the Kohorn organization. The plant which will be the largest in the world making viscose textile yarn, tire yarn, staple and cellophane under one roof.

Production & Exports Up — Preliminary figures indicate that combined production of viscose staple and filament in 1955 exceeded the pre-war high of about 663 million pounds for the first time since the record highs were reached in 1937/38. Paced by staple and spun rayon products, exports last year also showed substantial gains, as the final figures will show. A large array of rayon goods is going to the United States, ranging from staple and spun yarn to mufflers and shirts. None of these categories individually is very large, but combined they are a substantial poundage.

(Continued on Page 80)

Celanese Marketing

(Continued from Page 32)

it is possible to achieve. The fact that the quality is of this very highest level is crucial in the Celanese plan of promotion.

Next Celanese takes the cloth to a garment manufacturer who specializes in a higher priced line well advertised and having an impressive "prestige factor" with retailers and consumers. In effect, Celanese says to this manufacturer: "Here is a superlatively woven and finished fabric which, according to our careful study of consumer trends, will make a hit with women in the coming season. We offer it to you at a reasonable price and we will give you an exclusive on it for the coming season provided you make it into the kind of garments on which your reputation is based." Chances are that the garment manufacturer will snap up the fabric (let's assume, for example, it's an Arnel sharkskin suiting) on the terms offered.

Once the fabric appears in garments by the "famous name" manufacturer and has scored an initial success with consumers, Celanese as the converter who sponsored it, begins to have thoughts totally unlike those of the ordinary converter who has a "hit" fabric on his hands. Celanese begins to hope that other converters and mills will "knock off" the cloth. In fact, once the agreement giving the original user of the cloth an exclusive has expired, Celanese actively aids and abets other converters to bring out the cloth and offer it to garment makers who produce a lower priced, bigger volume line. Celanese's aim here, of course, is to stimulate production of the heaviest possible yardage. It goes without saying, of course, that in all the efforts of Celanese to help converters to bring out the fabric it is stipulated that the converters will specify Celanese yarns and fibers in their gray goods contracts.

In its promotional effort Celanese keeps busy a considerable staff of experienced converters spearheading the merchandising drive which is supported by the basic labors of a large group of fabric technologists and stylists headed by D. M. Georg as director of woven fabric development.

In summation, it is accurate to say that Celanese's promotional effort is a vigorous, many-sided and fruitful function geared to the daily rough-and-tumble of the world of textile converting, garment manufacturing and retailing. It is a program of action giving practical aid to all those in the industry at the weaving, converting and garment cutting levels who are willing, in return, to specify the use of Celanese yarns and fibers.

Small Samples

(Continued from Page 33)

The distance from the right selvage to the eye of the shuttle in the left box measured 51½ inches, the distance from the same selvage to the eye of the shuttle in the right box measured 60½ inches, a difference of 9 inches. This is the amount of yarn that would extend from the right selvage when the shuttle was picked to the left and would cause trouble in weaving, producing unsatisfactory cloth.

To conclude, in weaving narrow samples on broad looms precautions must be taken to prevent the filling from catching onto nuts and bolts of the lay assembly, particularly when a fairly high twist filling yarn is used, and to center the warp with the eye of the shuttle in the boxes on either side.

Shipping Cartons and Sales Tax: What Textile Merchants Should Do

Textile merchants doing business in New York City should take note of a recent court decision involving the New York City sales tax. Here is a summary of the effect of that decision as prepared by the Institute's legal adviser. In a case involving the Colgate-Palmolive-Peet Co., the court held that this company was liable for the New York City Sales Tax on cartons in which its products were sold to retailers. The court reasoned that the retailers were the ultimate consumers of the cartons although not of the products in them. Colgate was therefore held liable for a sales tax on the cartons.

If cartons have a resale value however, and the customer may sell them after removing the goods from them, the seller will not be liable for a sales tax if he can prove that they were resold. For this reason, textile merchants are advised to do the following if they ship goods in cartons:

(a) When you purchase cartons or containers for use in your business you should furnish your carton supplier with a resale certificate which, in effect, states that you are purchasing the cartons for resale. Once this resale certificate is furnished to your supplier of cartons, that supplier will not collect a sales tax on the cartons from you. Your resale certificate must bear your registration certificate number, which you may obtain from the office of the City Collector in the borough in which your business in located. The sales tax office of the City Collector has the application form.

(b) When you sell your merchandise to your customer in New York City, you should obtain from them their resale registration certificate, bearing their certificate number, which states that they are purchasing the products from you for resale and thus are not subject to the New York City Sales tax. If your containers or wrappings which go to your customers are of the type which have a resale value, it is advisable for you to invoice your customers separately for the piece goods as distinguished from the cartons and wrappings and obtain a separate resale certificate from your customer covering the piece goods and also covering containers and wrappings.

Finished Goods Standards Available

An official system for grading man-made fiber fabrics, and blends with other fibers and silks from the mill to the cutter and retailer becomes available with the publication of "Standards for the Examination of Finished Goods" under the joint sponsorship of The National Federation of Textiles, Inc. and The Textile Distributors Institute, Inc., according to an announcement made by Andrew J. Sokol, president of the Federation and Walter Ross, president of the Institute.

The standards were orginally introduced by the Institute in 1945 and submitted to and approved at that time by the garment manufacturers and their customers. The only change at this time is an additional provision to cover wide goods of over 50".

Henceforth, these will be the official Standards of the Examination Bureau of the Federation whose facilities are available to the industry at large. The examiners who inspect fabric for the Bureau are drawn from all phases of the textile and allied industries, including weaving mills, converters, dyers, and cutters. They are chosen to serve only on cases involving specific types of goods with which they are familiar.

The TDI's Technical Committee on Standards for the Examination of Finished Goods and the Federation's Committee on Quality Control worked together on perfecting them. Both Mr. Ross and Mr. Sokol expressed the appreciation of their respective organizations for the work which had been done by the two committees. As Chairman of the TDI committee, Max Meyre of William Skinner & Sons also served on the NFT committee; and Sheldon Van Vliet of Greenwood Mills, Inc., Chairman of the NFT committee, served as a member of the TDI committee.

Others serving on both committees were Harry Fleming, Burlington Industries, Inc.; Joseph Merton, Amerotron Corporation. Serving on the NFT committee in addition to those mentioned, were John E. Bell, Stonecutter Mills Corp.; William C. Curtis, J. W. Valentine Co., Inc.; Richard Densberger, Frank Ix & Sons, Inc.; George Dunn, J. P. Stevens & Co., Inc.; James T. Shotwell, Deering, Milliken & Co., Inc.; Georgie Suhrie, Fox-Wells, & Co., Inc.; and Charles Taubert, Klopman Mills, Inc. Other members of the TDI committee are Richard Roaman, Reliable Textiles; John Schoeberlein, J. W. Valentine Co., Inc.; Seymour Ulius, Belding-Hemingway Co., Inc.; and Frederick Wunderli, American Bleached Goods Co.

Copies of the standards can be obtained by writing to either the Textile Distributors Institute, 469 Seventh Ave., or National Federation of Textiles, 389 Fifth Ave., New York City. For non-members there will be a charge of ten cents a copy.

Stehli's Death Saddens Trade

Textile manufacturers and merchants, including many members of the Institute, expressed deep regret and sadness at the death of Henry E. Stehli, of Stehli & Co. A member and director of the TDI, Mr. Stehli was active in its affairs and was widely known for his ability and integrity in the field of merchandising.

1956 Golf Tournament Dates Set

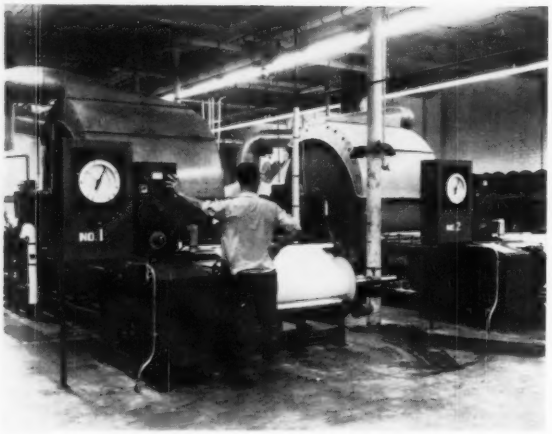
The annual golf tournament of the Textile Distributors Institute will again be held at Shawnee-on-Delaware. The Tournament this year will be on June 13, 14 and 15.

New Firm Announced

Briggs F. Spach Co., Inc., has been dissolved and a new company formed. The name of the new firm is Glen Eagle Fabrics Corp., with an office at 419 Fourth Ave., New York City.

Drives

(Continued from Page 60)

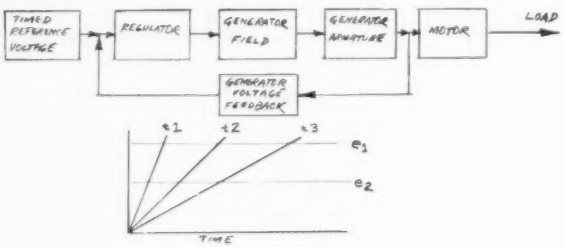


For slashers such as these, multi-motor drives with electronic controls provide excellent operating flexibility

Range Drives

By providing a condenser along with suitable charging circuits, and substituting the voltage across the condenser in place of the voltage across a rheostat, we obtain a reference voltage which will not change immediately with a change in rheostat setting, but which changes at a timed rate dictated by the constants in the charging circuit. This timed reference voltage is very useful in controlling the acceleration and deceleration rates of electronically-excited adjustable-voltage drives.

Controlled acceleration and deceleration rates, preset operating speeds, and regenerative braking are required functions for most textile range drives, and for multi-motor slasher drives. These functions are provided by control of the generator shunt field excitation. The block diagram for a sample system is shown in Fig. 5A, where a portion of the generator voltage is compared with the reference voltage—making the system essentially a simple generator voltage regulator. A compact and versatile unit is effected by providing a single electronic panel incorporating the timed reference voltage, regulator, generator, field supply, and feedback circuits. Independently adjustable acceleration and deceleration rate controls, provided on the electronic panels, may be preset to give a wide range of change rates as shown by the family of wires in Fig. 5B.



Figs. 5 A (upper) & B (lower)

Even though the functions mentioned could be provided by motor-operated rheostats, polarized relays, control relays, and a constant potential excitation source, many advantages accrue through the use of electronics in relation to the following:

1. Generator voltage feedback reduces speed changes caused by field heating, voltage regulation, and hysteresis effects.
2. A motor operated rheostat is limited to a given range of acceleration and deceleration
3. A standard electronic panel may be used for any generator, whereas rheostat resistance must be tailored for each different generator.
4. Electronic units are more compact with a resulting economy in space.

Slasher Beamer Drives

The simple voltage regulating dancer roll system is used in a variety of applications, and thousands of installations are in service today. Obviously, however, where low voltage feedback signals obtain, or where precise control is required, a regulator requiring 15 volts or so to swing it through its entire output range is not practical.

For these applications, the difference voltage or error signal between reference and feedback signals is not fed directly to the thyratron grid control, but to the input side of a high gain multistage electronic amplifier, the output of which, in turn, is fed to the thyratron grid control circuit. With this arrangement an error voltage of .025 volts is required to swing the regulator through its range instead of 15 volts. This is a precision type regulator.

Mention was made earlier of the slasher as a good example of the successful use of electronic excitation control to provide a smooth adjustable rate of acceleration to preset operating speed or from preset operating speed to rest by means of the same simple voltage regulator used in range drive control.

The multi-motor slasher drive also provides another excellent example of the application of the precision type of electronic regulator—in this instance, as a current regulator to control tension in the warp as it is wound on the beam. The block diagram for this system is shown in Fig. 6; the schematic representation is shown in Fig. 7.

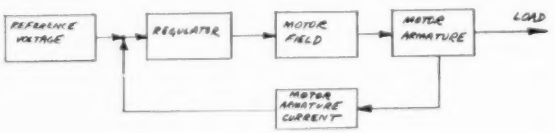


Fig. 6

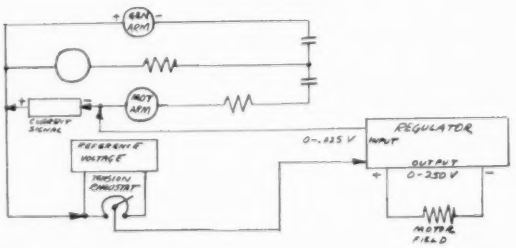


Fig. 7

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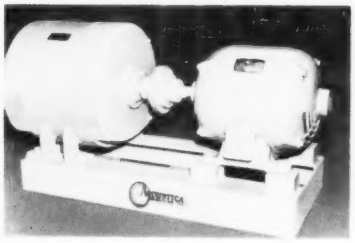
New MACHINERY and PRODUCTS



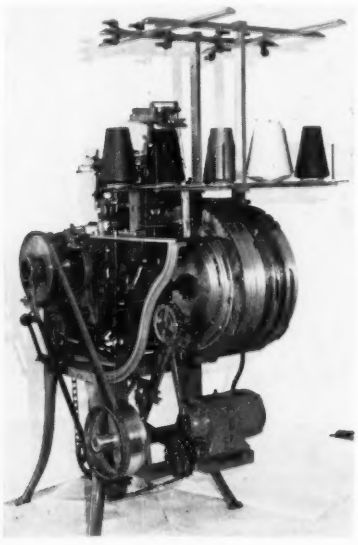
Ultrasonics in Wet Processing

According to Acoustica Associates, Inc., Glenwood Landing, N. Y., the ultrasonic barrier to textile wet processing has been broken by the introduction of low cost high frequency rotating generators ranging in size from 2 to 150 kilowatts. These generators are said to be capable of supplying economical power for energizing multiple arrays of above audible sound generating transducers needed to irradiate materials being processed en masse. Consequently, the favorable results of laboratory ultrasonic experimentation can now be extended into full-scale mill processes.

For further information write the editors.

High Speed Attachment For Argyle Sock Knitter

The Carolina Knitting Machine Corp. now has available a variable high speed attachment for its Argl-13 machine, shown at the Knitting Arts Exhibition last spring.



This attachment allows for an acceleration of the speed in the reciprocating action of each individual diamond on the boot of the sock. Previously, the reciprocating motion had been completely on the intermediate or slow speed pulley. In the new development, the action is started on the slow speed pulley for four courses, after which the machine is shifted to high speed for the greater portion of the diamond.

At the close of the cycle, the belt is again shifted to the slow speed pulley so that the points of the diamond and the beginning of the next diamond can be introduced without undue waste.

The total cycle on 160 needle socks 3½" diameter, 36 gauge is now nine minutes and 40 seconds in place of the previous cycle which was approximately four minutes longer.

For further information write the editors.

Three-Way Knitter Available

Another model of the Fidelity "400" electronic seam-free hosiery knitter which according to the Fidelity Machine Co., Inc., can be changed from plain to mesh or stretch fabric in a matter of minutes, has been introduced. The knitter will allow manufacturers to make their hosiery production as flexible as changing market conditions, since plain, mesh, or stretch ladies' hosiery can easily be produced.

For further information write the editors.

New Serigraph Improvement

To facilitate use for breaking-strength tests, Scott Testers, Inc., have added an "instant-return" feature to their Incline-Plane Serigraph. This is a standard instrument for hysteresis tests from 4-16 grams for single fiber and from 0-2000 grams for yarn. Constant-rate-of-load is applied by means of a rolling weight which loads the specimen as the plane is inclined from the horizontal.

The drive which inclines the plane at the predetermined rate is reversible at the same rate for hysteresis tests. The addition of the "instant-return" permits quick return to starting position from any point of the test cycle by

touching a lever on the gear box.

For further information write the editors.

Dayton Rub Apron

A rub apron has been developed for the textile industry by the Dayton Rubber Co., which is said to be longer-lasting, and to assure improved yarn uniformity. The aprons have two layers of rubber-impregnated, reinforced fabric instead of one layer as in the old-style aprons. There are also stronger ends to hold the buttons securely in place. According to the company, a new synthetic rubber composition helps the aprons resist the abrasive action of constant rubbing.

For further information write the editors.

Rooftop Power Exhauster

Proctor & Schwartz, Inc., announces the availability of their power exhauster which is designed for roof application. It is said to be suited for all types of industrial plants. The exhaust air is blown up and away from the roof minimizing the harmful effects of fumes on roof surfaces. According to the company, maintenance costs are low because the fan is directly connected to the motor. It is available in 4 models to cover a wide range of application.

For further information write the editors.

PAPERS OF THE
AMERICAN ASSOCIATION FOR
TEXTILE TECHNOLOGY INC.®

Textile Research Achievements in 1955

By J. B. Goldberg

FIBERS AND YARNS

Natural Fibers

Proponents of nature's fibers may contend that there is little room for improvement, but a review of the literature indicates that the scientists still have hopes of effecting modifications to enhance the properties of cotton and wool in particular. Last March Dr. J. B. Speakman, eminent English wool authority, stated that methods were evolved at Leeds University 10 years ago to give pleats in worsted fabrics which were just as permanent as those in mixtures of wool with some of the newer synthetics. He also reported that other knowledge waiting to be applied included dyeing wool in the cold; improving its luster; increasing wear-resistance; and reducing affinity for water.

An imposing series of papers was presented at the International Wool Textile Research Conference held in Australia last year covering research studies on wool and wool processing. Wool might become its own worst enemy if ultimate success is achieved in the production of protein fibers from wool waste and hair as described at this conference.

"Supima", a new Western variety of cotton, grown after years of research, and said to be highly lustrous, stronger and more resilient than any other cotton, was introduced commercially by a newly formed promotional organization. Describing such a fiber as the "champagne" of cottons appeared to be an attempt to glorify the product of a gin mill.

Reports of progress in the chemical modification of cotton by cyanoethylation were presented at several research conferences. Mindful of the criticism of the "downtrodden" look in cotton tufted carpeting which became popular a few years ago, a project was initiated just recently at the Southern Research Institute to try to improve its resilience for this end use. And the results of a research project by the Hoover Company to find means for better "on location" cleaning of such carpeting are due to be disclosed soon.

Presented at the January 4, 1956 Meeting of the American Association for Textile Technology, Inc.

The U. S. Agricultural Research Service reported that almost all of a 4 million pound production of ramie fiber in 1954 went to a single company, but a British concern abandoned its ramie fiber project in British Honduras because it was not economically sound. A new technique suitable for decortication of ramie relied on the use of ultrasonics, according to a Massachusetts research laboratory. Popularly used as a carpet backing for many years, jute yarns achieved new dignity by being introduced in a range of 16 colors for surface yarns in the manufacture of luxurious, inexpensive rugs and carpeting, as well as for hand weaving.

J. B. Goldberg

Following graduation from M.I.T., J. B. Goldberg gained his early textile experience at the Celanese Corporation of America and the Slater Mills. He joined J. P. Stevens & Co., Inc. as Research Director in 1937, resigning in July, 1953 to engage in private consulting practice for the textile and allied industries. Mr. Goldberg, a Fellow of the Textile Institute, is an active member of many technical organizations and has presented a number of papers both in the United States and abroad. He is also the author of the book, "Fabric Defects", and publishes "Textracts", a monthly summary of textile news and technology.

Acrylic and polyester fibers are now being used as pillow stuffing but inexpensive feathers may soon be back in the pillow fight. Early in the year Alexander Smith, Inc. announced their "Keracurl" process for the low-cost treatment of chicken feathers to impart filling power, warmth and resiliency comparable to those of duck and goose feathers. Reminiscent of the redwood tree bark fibers offered as a stuffing and for fiber blending a number of years ago, is still another suggested filler for pillows, bedding and upholstery, a treated bark from the Australian Ti-tree. According to the report, this material was apparently in use in a number of Australian hospitals. Erupting from Italy came word of textile fibers made experimentally from volcanic lava, yielding fabrics which were resistant to acids, alkalis and temperatures up to 1100°C.

Man-Made Fibers

On the man-made fibers front, American producers, as well as mills, converters and consumers, seemed to be enjoying a slight rest period from the barrage of new synthetics which hit the market a few years ago. Announcements were confined to new names or progress reports on synthetics disclosed in previous years. The B. F. Goodrich Company adopted "Darlan" as the name for their new dinitrile fiber, born "Zetek", but still in pilot plant production only. The American Cyanamid Company reverted to "Creslan" as a more stable designation for their experimental acrylic fiber and yarn. Allied Chemical and Dye Corporation christened their caprolactam nylon "Caprolan", and the Celanese Corporation went into commercial production of their high tenacity filament rayon "Fiber X-6" as "Fortisan-36".

At the turn of the year it was reported that the California Research Corp., a subsidiary of the Standard Oil Co. of California, planned to produce iso-phthalic acid as a raw material, with some interest in research to produce a new textile fiber, but no additional information on the subject has been published. Du Pont developed a new Type 680 dull nylon with improved resistance to sunlight degradation and very recently announced plans for the commercial output of Orlon 39 staple, predominantly coarse denier filaments of varying lengths, particularly suited for the woolen spinning system.

There were also rumors of a dyeable filament Orlon just around the corner. American Bemberg introduced a heavy denier monofilament lustrous yarn as "Glitter". A process for the production of very fine filaments (less than one micron in diameter) of fiber-forming polymers, such as Vinyon, was reported by American Viscose with greatest success claimed in producing filaments for gases. Competitive with American Enka's "Jetspun" solution-dyed filament rayon and Courtauld's "Coloray" staple, the American Viscose Corporation recently announced the availability of their "Colorspun" dyed filament and staple rayons in a limited color range.

"Nymo Uvr" was publicized as a new Belding Corticelli sewing thread with resistance to ultraviolet degradation estimated to be five to ten times superior to ordinary nylon thread. A novel reflective yarn, for introduction in knitted or woven fabrics to be used in garments and thus act as a safeguard for pedestrians on streets and highways at night, is "Flecton", developed by the Minnesota Mining and Manufacturing Company. Two types of this yarn reached the market in small quantities by the end of the year, one using a rayon yarn base; the other, nylon, with the reflective material presumably comprised of tiny glass beads.

Only a few weeks ago Allied started output of heavy denier industrial "Tensile Tough" nylon yarns with a minimum average tenacity of 6.5 grams per denier. Labor cost saving in quilling, warping and knitting was possible through introduction by Celanese of acetate yarn on 6 pound cones and American Enka announced that they were the sole producers of 3-pound knotless cakes priced lower than cones and insuring greater efficiency. Aimed at eliminating shading and colorfastness problems and permitting the development of novel blended color effects, the Hartford Rayon Corp. was first on the domestic front with solution-dyed rayon carpet staple.

According to trade reports, manufacturers of rayon tire cord are preparing for introduction of even stronger high tenacity yarns that may reduce the relative superiority of nylon.

At the Congress of Industrial Chemistry meeting in Madrid a Belgian company announced a new class of polyacrylonitrile polymers which offered interesting possibilities for new synthetic fibers which might be dyed easily and inexpensively. It was also suggested that the dyeability of Orlon fibers is greatly enhanced when they are treated with hydroxalamine in aqueous medium; and that fabrics so dyed are wash-fast and more water absorbent with little loss in physical properties.

Not to be outdone by the ingenious Japanese who developed a synthetic fiber from rice, bran, whale oil and urea, and probably uncovered by a reporter with a nose for news, the Russian Institute for Artificial Fiber Research reported producing a viscose fiber with up to 20% of proteins from whalemeat or fish refuse. British Celanese, Ltd. announced plans to make "Cellon", a nylon-6 polymer type staple, and offered three new acetate yarns: a "marl" yarn composed of a mixture of colored and undyed filaments; a "whiter white" yarn, and "Souflette", a voluminous yarn. Courtauld's Ltd. exhibited their new KN acetate yarns said to give an attractive silk-like handle and to impart crush-resistance.

Also from England came reports from another manufacturer of a new type of viscose yarn, with no details disclosed. From Germany there were announced "Prelana", and "Dolan" acrylic fibers, the latter available in a wide range of colors. The Belgian Fabelta company was said to be in pilot plant production of "Z-54" high-tenacity rayon with a low degree of swelling and improved resistance to washing, abrasion and tearing.

Patent literature revealed a method of making rayon highly absorbent by dispersing silica gel in the viscose solution, and just to be contrary, another patent described means of reducing absorbency by the introduction of a polyacrylamide or formaldehyde derivative.

A novel type of yarn claimed to provide a high degree of thermal insulation at low cost originated in Germany. Thin strips of a foam material ("Moltoprene") are wrapped with cotton or rayon yarns, and the woven fabrics, trade-marked "Ceolon", were being used for coats, jackets and bathrobes. A high-strength multiple core yarn (trade-marked "Delwin") was developed by two scientists of the Canadian Dept. of National Defence and numerous applications were anticipated in industrial fabrics, for work clothing and apparel where greatly improved tear resistance might contribute to longer life.

MANUFACTURING METHODS AND EQUIPMENT

Fiber and Yarn Processing

Experiments in the use of high draft, high production top-breaking devices on rayon tow were conducted by a Rhode Island company last January with drafting zones providing a maximum draft of 216. Saco-Lowell announced a new model comber operating at 125 nips per minute which gives increased piecing and yields sliver with not over 12% variation. Still in the process of development was their new high production draw frame to be built in heads of four deliveries only, each driven by its own motor. A new top arm loaded and adjustable spring pressure system and the elimination of all weight hooks are among the design features. Output is expected to be double that of conventional frames.

Recently there were unconfirmed rumors of a new Saco-Lowell direct spinning frame known as the "Spinster" said to eliminate the roving process in the long draft system of spinning.

Described as entirely new in construction and operation was the Whitin "Even-Draft" drawing frame, covering a range of staples up to 3" in length. Drafting is by a four over five roll drawing unit and delivery rate about 40 pounds per hour for a normal weight of sliver. Pneumafil cleaners and large cans contribute to lower labor costs. (For a full description of the machine, see MTM, Jan. '56, p. 33 & 67.)

The Whitin Spoolmatic Redraw Doubler provides highly economical means for uptwisting multiple-ply yarns with the doubling of several ends and a single spool eliminating need for expensive equipment on the twister to detect broken ends. Another Whitin product designed for creating novelty yarns with splash effects of alternating colors, the Duplex Splash attachment for twisters permits rotation speed changes on both upper and lower lines of delivery rolls independently. Pneumafil's new Lint Free Creel utilizes an air foil principle to permit air to pass around creel parts and clean all surfaces with a minimum of resistance.

The increasing demand for elastic type or stretch nylons encouraged the design of new equipment on the part of several machine manufacturers. Universal Winding offered its new No. 550 Leesona Stretch Yarn Machine and announced acquisition of the Permatwist patent applications covering process and apparatus for many such yarns. Last May they signed an agreement with the Heberlein Patent Corp. to protect against possible infringement of that company's patents.

The first two of a number of patents pertaining to the manufacture of stretch yarn hosiery were issued during the summer. Burlington Industries and Chadbourn formed a joint company, "Patentex", to handle patents in this field. A North Carolina hosiery company received a patent on the preparation of stretch nylon yarn without heat setting or shrinking. More recently another mill announced a new process for producing such yarns at a very high speed and low cost through use of a combination false twister and heating chamber.

Another false twisting and setting technique was disclosed by British Nylon Spinners, Ltd. early last summer. Later the same yarn producer exchanged licensing agreements with the Deering Milliken Research Trust for the manufacture of a no-torque stretch yarn, adopting the name of "Agilon" originally used by the American concern. Also for the production of crimped stretch yarns, the English concern of Scragg and Sons, Ltd. patented several components of a new processing machine said to work on the false twisting principle, operating at speeds of 20,000 to 50,000 r.p.m.

A novel tire cord twister which takes yarn from the manufacturer's package and yields finished tire cord on a single spindle at speeds of from 8,000 to 10,000 r.p.m. was shown by the Deering Milliken Research Trust at the Second International Textile Exhibition in Brussels last summer. The Coats and Clark plant in Georgia was reported to be the first American plant to import a Swiss twister frame which is only 8" in working width and 25" wide at the headstock, gear driven spindles eliminating some of the difficulties encountered with spinning tapes. For those machines still utilizing tapes, the Burlington Industries developed a new bondable nylon tape with a life of three to four times that of traditional tapes, at the same time overcoming distortion normally encountered in spliced or sewed tapes.

Foreign machinery improvements included a new Japanese super high-draft spinning frame eliminating roving and reputedly suitable for turning out a wide range of fine yarns from combed drawing sliver with quality equal or better to yarns spun on conventional equipment but at a lower cost. Some of the accomplishments appeared to be not unlike those attributed to a German sliver-to-yarn cotton spinning frame described a few years ago. Another Japanese product was the Toyoda "wave draft" device for high draft spinning undergoing mill tests and described as consisting of a pair of interlocking, gear-like steel rolls between two condenser rolls replacing the apron, eliminating cleaning or changing of roll covers.

The English concern of Platt Brothers offered a new top apron drafting system and spring tray weighting for roving frames to provide greater versatility in handling a wide range of cotton staples. Exhibited at the Brussels Exhibition was a new English flyer and flyer presser utilizing a new principle to give tension control without stretching the roves. Claims were made for providing denser bobbins with improved quality and higher productivity. Of interest in the manufacture of non-woven fabrics was the report of a German machine for the automatic production of cross-layed fiber webs of identical strength in longitudinal and transverse directions.

The new Swiss "Automixer" was disclosed as a blending machine capable of feeding three pickers with up to 1300 pounds of fiber per hour with superior controlled accumulation and blending. A French publication carried a description of a new device to control tensions between front roller and flyer on roving frames by passing it over a light slot activating a photoelectric cell mechanism which in turn alters winding rate onto the roving bobbin.

Warping, Slashing, Weaving and Knitting

The McBride three-way signal light for attachment to magazine warper creels allows immediate detection of broken ends. "Moretex 70" was described as a new top dressing for sized warps to replace fats and softeners in sizing, claiming advantages of reduced shedding, fewer yarn breaks, more effective control of moisture content and easier desizing.

A new concept of air flow designed to eliminate rolled yarn, hard size and over-drying was embodied in the new Saco-Lowell hot air slasher. A New Jersey dyer claimed innovations in slasher dyeing technique to give improved weaving efficiency. "Non-stop" slashing was credited to a slasher doffer which automatically severs full warps and starts winding on a

new loom beam without stopping. The Draper "Tru-Mold" shuttle featured dimensional stability under atmospheric condition changes, better shuttle flight control and 2½ to 3 times longer shuttle life. A new type Wilton carpet loom by Crompton and Knowles is provided with controls for starting, stopping, adjusting of pile, warp tension and reversing. Sculptured effects are possible with cut or uncut loops.

The Lansdowne Steel & Iron Co. offered a new carpet loom said to have productive capacity comparable with that of tufting machines. Designed to eliminate wavy cloth, the Southern Loom Development Company filed patent applications for a new variable speed positive let-off. Claiming simpler construction than American-made devices, an English manufacturer patented a new bobbin truck incorporating a spring base to present operators with layer after layer of bobbins as top ones are removed.

Although American manufacturers continue to report shuttleless loom projects still in the experimental stage, foreign competitors have been marketing a limited number of various models for mill evaluation. About 20 Italian Ripamonti looms are said to have been built to date operating at speeds up to 700 picks per minute with a filling supply adequate for 48 hours working without replenishment.

Some further details of the Czech Svat loom with pneumatic picking motion were revealed which indicated speeds of 500 picks per minute in narrow fabrics. A unique Spanish weaving machine said to produce 24 rolls of cloth simultaneously in several colors of filling was described last March. Six warp beams are arranged alongside of each other on each side of the machine with filling inserted by a series of yarn carriers fed from cones at each end of the machine.

Of English origin was the "Isotron" static eliminator, very much resembling the radioactive type introduced by an American company a number of years ago. Also from England came a description of a continuous filling supply attachment for inserting double picks, promising to increase loom output and save the cost of pirn winding, the filling being fed from cones at each side of the loom. Conversion cost was estimated to be under $200.

Among English contributions in the field of knitting were the new 168 inch F.N.F. warp knitter with continuous production speed of 900 courses per minute and a superspeed full-fashioned underwear and outerwear knitting machine operating at 100 courses per minute and credited with offering better selvedges and fabric face. Robert Reiner, Inc., announced plans to import the German Liba tricot machine which uses three guide bars for normal knitting with a fourth for special patterns.

FINISHED GOODS

Dyeing and Finishing

Better methods for the stabilization of rayon fabrics continued to retain the interest of research workers as well as dyers and finishers. Early in the year the Old Fort Finishing Division of United Merchants and Manufacturers announced their "Fortset" finish for spun rayon shirtings, guaranteed to withstand repeated laundering at 160°F. with no significant shrinkage. Since then other dyers have offered stabilized finishes with similar claims.

A patent issued to Du Pont described a method for imparting dimensional stability to fabrics by ultrasonic vibration treatment in an aqueous bath, but no practical application has yet come to our attention. Newly developed resins to be used in combination with Avcoset stabilizing finish promised to impart durable crease-resistance and any desired hand to rayon fabrics without sacrificing dimensional stability and with minimum loss of tensile strength due to chlorine retention. Last November Cluett, Peabody received a patent on a new gearless type of compressive shrinkage machine incorporating a thick rubber belt and credited with providing a smooth finish on both surfaces of the preshrunk fabric.

Considerable progress was reported in methods for achieving single-bath dyeing of acrylic fibers in blends with wool, as well as blends of Dacron polyester fiber with rayon and wool, utilizing such techniques as cationic dyes, cationic active dyeing assistants and combinations of cationic and non-ionic materials. Improved dyeing on acetate was obtained by means of the new "Eastofix" colors announced last April, with fastness to 160°F. washing for 45 minutes and light-fastness of not less than 60 and up to 80 and 120 hours.

Subject of an interesting research study reported on by Celanese scientists was that of ozone or "O" fading of acetate drapery fabrics dyed with "gas-fast" blue disperse dyestuffs. Working closely with dyestuff manufacturers, dyers and finishers, other Celanese research workers reported progress in dyeing and finishing Arnel fabrics, both in 100% form and in blends.

According to the inventor, a recent patent on a continuous piece dyeing method incorporating continuous agitation of the solutions may effect up to 35% saving in labor costs. Pressure dyeing machines for handling tufted carpeting up to 15 feet in width were introduced in Georgia plants to effect more uniform dyeing. New flame proofing treatments for cotton cloth were among research development reports emanating from the U.S.D.A. Southern Regional Research Laboratory and the University of Chattanooga.

The application of ultrasonics to the textile industry is still creating only a faint ripple of interest, but a few items recorded during the past 12 months may be the forerunner of more shaking developments in the months ahead. The General Ultrasonic Company claimed that their "Sonidye" process permits dyeing of Orlon in two to three minutes, according to an announcement made last May. Low cost high frequency rotating generators suitable for scouring or dyeing operations were introduced by a Long Island company a few months later. Earlier in the year Hungarian technicians claimed to have developed ultrasonic equipment for drying fabrics by shaking out the water in a fraction of the time normally needed. Experiments conducted in piece goods washing processes indicated that a similar method might be more economical than traditional practice. It may be recalled that the washing of garments by sound waves was investigated some time ago and a small vibrator for home use was said to be on the market in England. Recommended for use in small washing tubs along with soap or detergent solution, this device was supposed to insure freedom from wear and tear on delicate garments.

A new peroxide bleach process which eliminates silica scale was the subject of a patent application by Becco Chemical. Proctor & Schwartz introduced a new continuous bleaching range with a capacity of 30 thousand pounds in a 24-hour day operation at up to 150 yards per minute. A silicone emulsion was claimed to be successful for imparting a combination of water and moth-resistant finish to wool, unaffected by a limited amount of repeated laundering and dry-cleaning.

Interest was revived in woolen and worsted goods moth-proofing, with added features of improved wrinkle-resistance, dimensional stability and stain-resistance incorporated as part of an all-inclusive finish. Antiseptic finishes, too, appeared to take on new importance with the promotion of "Perm-A-Septic" and "Sub-Du" in addition to the long-established "Sanitized" process for imparting enduring resistance to germs, bacteria, perspiration odors, fungus and mildew.

Scientists still seem to be engaged in trying to imitate the characteristics of one fabric by modification of another. This was borne out by a British patent which described a process for "linenizing" cotton. Another British concern exhibited "cottonized" finish at a recent national fabrics fair, designed to give spun rayon the appearance of cotton. Instead of following such roundabout methods for transforming the appearance of rayon to cotton and then effecting a change from cotton to linen, our American spinners, weavers and finishers long ago took the more direct approach of making linen-like fabrics directly from spun rayon.

Stimulated by the increasing popularity of wash, drip-dry and wear without ironing garments made of fabrics of the newer hydrophobic synthetics, there was a tremendous promotion of "no-iron" cotton fabrics started early in the year. Most of these depended on the use of selected resin finishes of the crease-resistant type. Careless claims for care-free cottons were soon modified to include suggestions for "some" ironing if the wearer wanted to look more like a snob than a slob. There followed the introduction of a limited number of rayon fabrics also processed to require a minimum of ironing after laundering and drip-drying. Joseph Bancroft & Sons acquired rights to an English patented means for imparting durable ruffled or pucker effects on fabrics, plastics or leather.

The Apponaug Company "Dynascope" a French process for multicolor photographic printing was said to provide up to nine shadings of each color, most patterns using only three or four rollers. Wamsutta Mills introduced fabrics with three dimensional effects by an Italian "dry printing" method. A novel overprinting technique for fabrics, felts and leather disclosed last fall involved the application of metallized particles punched out of sheets of acetate butyrate film treated with a metal alloy. A combination one-step screen printing and embroidering process was reported in use by a New Jersey company. United Piece Dye Works introduced "Perfo-Prints" in which roller printing was combined with burn-outs, applicable to a limited number of cotton constructions.

Among printing innovations originated abroad was the Portuguese "Aljaba" machine employing large, light-weight cylindrical screens instead of engraved copper rolls. It was reported that the Morrison Machine Co. was building this equipment in the United States.

The German "Textima" printing machine was constructed with rollers arranged one above the other all in one plane, each with a pair of short axles, eliminating mounting on mandrels. Production speeds of up to 100 meters per minute were claimed, along with features of easy changing of the rollers, free view of the goods during printing and saving of power. An Italian automatic screen printer, capable of printing up to 10 colors at 360 yards per hour, utilizes a continuous belt to which the fabric is gummed and then passed over a printing table equipped with stencils which are raised and lowered automatically.

Limited to single color printing, with an output of 30 to 40 yards per minute, a Scottish screen printer depended on use of an endless gauze band through which color is doctored onto the cloth. Imitation knitted designs were achieved by an English machine which printed patterns on half hose. Another German machine was described as suitable for one to eight color printing, one-color flock printing, or multi-color screen printing with successive one-color flock applications. The Swiss "Tex-o-Stat" combined a flock and screen printing machine, and was heralded as being the only one capable of producing an effect of continuity in design, eliminating evidence of a joint between screens.

New Developments in Fabrics

Atomic age terminology seems to have penetrated to the textile field. The growing use of cashmere in fabrics finally led the Federal Trade Commission to warn against "cashmere fallout" in blends represented as containing more of this precious fiber than could be detected in the finished goods. Fur-like acrylic fiber pile fabrics, although not new in 1955, became exceedingly popular among women's coat manufacturers. A few weeks ago a new version, identified as "Mutation" and described as "mock mink", duplicated the luxury fur in a variety of colorings and stripe effects.

Arriving in time for the holiday season, a fitting companion garment to be worn a few layers beneath such coats was nylon tricot lingerie trimmed with 24-carat gold. To further complete the luxury look, a European firm recently brought to this country $5 nylon hosiery in a 90-gauge, 7-denier construction, acclaimed as the world's sheerest stockings. A few months earlier there were reports of an English knitter marketing what might be considered by comparison comparatively coarse stockings, since they were only 75-gauge, but the nylon yarn was down to 6-denier. Most timely was the offering in Germany of a combination washing agent and polyvinyl alcohol compound to protect against corrosion effects on sheer nylon stockings.

For the poor male who might be considering going barefoot to keep his wife clothed in gold, mink and a few wisps of nylon, an ingenious inventor patented socks consisting of layers of soft, porous, moisture-absorbent paper. To continue in the spirit of economy, another patent was issued on a disposable paper raincoat. Probably to overcome the shortage of full-fashioned hosiery machines, the Japanese were said to be making hosiery from cut and seamed 15-denier nylon tricot, using a second layer for re-inforcement at the toe and heel. Pre-shrunk Bemberg tricot fabrics were announced by Beaunit Mills last May and proved to be popular in the lingerie market.

Early in December U. S. Rubber announced development of "Trilok", a flat woven fabric which becomes permanently three-dimensional when immersed in boiling water. Use of polyethylene yarns in warp only and conventional yarns in the filling permits high shrinkage of the former with a resultant "puff" effect. Initially introduced to the automotive trade, applications are anticipated in furniture covering, draperies, bedspreads and carpeting.

High bulk acrylic fibers captured the knitted outerwear market early in 1955 and the processors of tow vied with each other in claiming techniques which yielded the most lofty yarns for this trade. Another method for making a novel bulk yarn was the subject of a patent issued in February involving blending of

two different kinds of fibers with unlike shrinkage characteristic.

Tests made in an automobile assembly plant indicated that work gloves of heavy-duty canton flannel containing a blend of cotton and nylon gave more than twice the wear of conventional cotton gloves. In spite of the growing use of blends in apparel fabrics, however, some people are still guided by the bible rather than the fabric technician. Heeding the admonition that we should not wear garments of blended fibers, a London retail merchant established a shop for the sale of what he designated as "kosher" clothing composed of nothing but pure fabrics.

Rayon "straw" has been known for many years, but a newer approach was the design of an all-Dynel straw-like fabric for men's hats to be on sale this summer and not likely to wilt in the rain. Of more interest at this time of year is the introduction of a new look in wool blankets. While single pieces of goods with more than one shade have been known to emerge from some of the best dye houses, the deliberate production of two shades on opposite faces of a wool blanket in a single dye bath was achieved by Kenwood Mills. Means for obtaining carved effects in pile constructions by heating fabrics composed of a composite yarn of natural and vinyl thermoplastic fibers was revealed in a patent issued to Firth Carpet Co. last January. During the same month U.S. Rubber Co. received a patent on a method of making a "breathable" water vapor permeable but waterproof coated fabric by incorporating softeners, water-repellent materials and a purified wood cellulose flock in a neoprene.

Among developments not likely to consume any great poundage of fibers were extremely strong and tough papers made with nylon or other synthetic fibers, a flat woven calendered Dacron taffeta for use in the fabrication of human blood vessels; and a knitted Orlon tubing to substitute for the principle human artery. Fiber glass made an appearance as a scrim cloth base for high wet strength paper to be used in one-trip mail sacks and as woven "glascloth" combined with flexible vinyl plastic to make a moisture-proof wall covering. New outlets for rayon not related to fabrics were rayon staple sterile absorbent with the suggestion "use like cotton" and a polished rayon twine called "Amercoty", 12% cheaper and 15% stronger than similar polished cotton twine.

An interesting method for obtaining fancy effects in fabrics during weaving was dependent on wrapping ordinary rubber hose around the whiproll, resulting in variable warp tension and deliberate fabric distortion due to pickage variations. For improving the wearing qualities of rayon fabrics, a New Jersey company applied a latex coating with suggested uses in household upholstery and automobile seat covers. The "do it yourself" fad spread to the textile industry in the form of fabrics with printed patterns outlined for the filling in of colored inks by the amateur cloth decorator.

It was predicted that nylon tarpaulin fabrics would replace even greater quantities of conventional cottons. At least two manufacturers were making a laminated type of finished product by applying sheets of polyvinyl chloride to either side of woven nylon, although other manufacturers were partial to rubber coatings. Cotton gained a new market, however, in 10-ounce duck coats worn by sheep to protect the fleece from dust. This switch on the wolf in sheep's clothing was said to be protection against coyotes which did not recognize the strange looking animal.

Automobile tires were reported to have been made with silicone rubber wedded to glass fibers, exhibiting extremely good low and high temperature resistance; and also with aluminum yarns as a means for dissipating heat in tire use. In the non-woven fabrics field, announcement was made of several new plain and printed versions of materials said to be useable as outerwear and featuring washability, good draping and sewing qualities and dimensional stability. "Nylabond" was the name given to a new, light-weight industrial padding composed of nylon fibers bonded with phenolic resins. Air and watertight foam lining materials were being sold in Switzerland for use as linings to be attached to fabrics for all-weather clothing as well as for life-saving vests, bed underlays and airplane berth coverings.

Testing Methods and Equipment

There were few new American testing instruments or methods disclosed in the literature during the past 12 months. Among those publicized were an improved Scott Incline Plane Serigraph Tester with an instant-return feature to facilitate use for breaking strength tests and a pendulum attachment for a twist counter by the same manufacturer to simplify the analysis of single yarns. The U.S. Testing Co. offered a Universal Stiffness Tester, applicable to dissimilar materials and suitable for determining the effects of treatments and coatings.

Custom Scientific Instruments, Inc. went into production of the Electro-Static Voltmeter designed by the Institute of Textile Technology. Also introduced by the same instrument manufacturer was a high speed recording tensiometer developed by Celanese Summit Research Laboratories. An accessory for the Micro-naire device was said to increase operation efficiency by up to 40%. The Speedar was described as a new high-speed Arealometer for the rapid determination of fiber fineness and packing modulus. The combination pilling and wear tester offered by Fabric Development Tests was further modified and improved last year. For mechanically counting-courses in any knitted hosiery fabric, the "Marvel-Meter" was said to be rapid and simple to use.

A novel cross-sectioning slide of thin Plastocel carbon-impregnated acetate plastic was recommended for use in making fiber cross-sections. For laboratory chemical treatment of cotton fabrics details were published of an apparatus consisting of a cylinder around which 8 x 10 inch samples were wrapped. Developed at the N. C. State College Dept. of Textile Research, the "Draftometer" combined mechanical and electronic features in an instrument to measure drafting forces in sliver and roving.

American journals carried reports on the evaluation and comparison of yarn evenness testers; a dynamic yarn-break test to predict weaving performance; and the effect of nuclear radiation on yarn strength; also, a rapid method for determining the density of chemically modified cotton and an instrument for measuring fiber crimp. Research by University of Southern California scientists indicated that measurement of detergency by reflectance may give erroneous results due to change in carbon particle size distribution. It was suggested that consideration be given to microscopic techniques or radioactive tracers. Other research workers investigating detergency measurement using artificially soiled cloths concluded that there is no substitute for actual performance tests under practical conditions, the laboratory results being of prime value for screening purposes only.

From laboratories of the British Rayon Research Association came a "Speedo-tex" stroboscopic type instrument for use in mills to determine speed of yarns in motion; the revolution of spindles, gear wheels or shafts, and a new version of electronic yarn tension recording equipment. English journals published a description of a newly designed instrument for determining tear strength, permitting accurate determinations by single rip, tongue or trapezoid methods; a collective yarn testing method for breaking 100 threads at once; and an instrument to estimate wool fiber cross-sections.

More complete data on a simple test to give a "Duty Factor" as a measure of fabric serviceability, as determined by workers at Courtauld's, appeared in the literature in January. A new type of testing machine, the BFT Mark II, was reported as being suitable for measuring resistance to flexing and to ball penetration on resin-finished rayon staple fabrics. From England, too, were reports of a new laboratory dyeing machine featuring various holders for yarn, piece goods or bulk fiber; and a cloth profile recorder to measure pick spacing in thick and thin places; to show change of pick spacing at pirn changes, and to detect varying degrees of pebble in crepe fabrics. Of German origin were a pressing tester for determining dimensional changes in fabric shrinkage and the "Statometer", a portable, battery-operated static meter.

During the past year the Dutch Enka Company disclosed a technique for evaluating yarn liveliness, derived from the Shirley Institute "Snarling Test"; an instrument operating on the principle of a chain balance for fiber crimp measurements; a twist irregularity meter for tire cord; and means for determining the voluminosity of yarns.

Organization and Research Institute Activities

The National Cotton Council, following the pattern established several years ago, sponsored a cotton research clinic in February and a chemical finishing conference in September. The former highlighted research reports and discussions of the newest developments in cotton fiber processing and testing, while the latter emphasized progress in the chemical modification of cotton and fabric finishing. At the annual meeting of the Textile Research Institute papers were presented on the mechanical properties of fibers, chemical structure of textiles, a study of the soiling of carpet fibers and the effects of heat treatment of Arnel cellulose triacetate yarns and fabrics.

Representative of the important part played by our textile school research departments, N. C. State College School of Textiles released for publication details of the carding project sponsored by six mills several years ago, describing methods by which appreciable reduction in card waste could be achieved. A record attendance was reported for a new course in Parachute Technology offered at Massachusetts Institute of Technology.

Committee D-13 of the American Society for Testing Materials was active in studying test methods for stretch yarns; crimp; stiffness; tricot fabric grading; snagging and shrinkage in laundering, as well as in the investigation of analytical test methods of some of the newer synthetics in blends.

Celanese announced plans to establish most complete development laboratory facilities at Charlotte. The Rayon & Acetate Producers Group initiated a research program directed at improving finished rayon and acetate fabrics. The Textile Research Institute made plans for providing additional space at Princeton. In England, new research laboratories were opened by Courtaulds at their Coventry plant and by British Enka, while the Textile Machinery Makers, Ltd. prepared for further expansion of facilities.

Along with the application of research to improve the old and create the new, it is gratifying to note a growing interest in the establishment of standards of quality to insure consumer satisfaction. The "Avisco" Integrity Plan of American Viscose Corp. proposes to provide an incentive for the production of serviceable fabrics. The Bishopville Finishing Co. announced adoption of the American Standards Association L-22 end-use standards for rayon and acetate fabrics. Courtaulds of England extended their "Tested Quality Plan" to include woven as well as knitted fabrics. The National Association of Shirt, Pajama and Sportswear Manufacturers disclosed plans to label farbics in five categories, ranging from "completely washable" to "dry clean" and a group of New Jersey dyers organized to improve dyeing and finishing.

Summary

To select the outstanding fiber and fabric developments of the year is more difficult than choosing an All-American football team. Those which reached maturity in 1955, even though they were born earlier, include knitted wear of high-bulk spun Orlon or Acrilan; wash-and-wear fabrics of 100% synthetics; Dacron and cotton blends and 100% cotton; stretch nylon hosiery; Orlon-Dynel pile "fur-like" coatings; Acrilan and Orlon blankets; nylon tarpaulins; rayon tufted carpeting; stabilized finishes for rayons; metallic yarns; and solution-dyed fibers and yarns.

Accomplishments in chemical, dyestuff and mill finishing processes and equipment are not singled out because each is a contributing factor in the developments mentioned above. The trends are clear—more versatile equipment for handling a variety of fibers and staple lengths; larger packages and fewer operations in converting fibers to yarns; simpler and speedier weaving machines; more efficient wet processing; improved color-fastness; controlled shrinkage; and tailor-made finishes to suit specific end-use requirements. Research is a versatile performer—it gave us something new yesterday, improves it to-day and tries hard to make it obsolete tomorrow.

Report from Japan

(Continued from Page 69)

Importers of synthetic fibers have formed their own trade association, with the avowed object of pressuring the Government into a more liberal attitude on imports. The Government holds that the budding domestic synthetics industries must be protected. The importers, spinners and weavers of the imported fibers say that the demand now far exceeds the domestic supply. They argue, too, that acrylic and polyester fibers are not being made in Japan, and that imports of these and of acetate fibers should be permitted. It is argued with some logic that these imported supplies help build up the market acceptance and sales potential for the day when domestic production can fill the demand.

There are new reports of a major textile firm about to announce development of its own acrylic fiber and plans for production. There are also reports, stronger than the past year, of negotiation for production here of two American acrylic fibers.

Textile News Briefs

David H. Smith has joined the Universal Winding Co. as systems and procedures analyst.

Dan River Mills, Inc. announces the appointment of two sales managers: **V. Clyde Verlander,** Los Angeles office; **Edward A. Tobin,** Atlanta office.

W. E. Bassett has been appointed director of textile operations in Celanese Corp.'s Charlotte, N. C. headquarters. **F. Murray Davidson** will take his place as manager of the Customer Service Dept. in Charlotte. **Thomas F. Connell** has been made manager of the company's spun yarn plant at Burlington, N. C.

M. Romer

M. Romer has joined the merchandising division of Industrial Rayon Corp. The company also appointed **Kenneth H. Robbins** as assistant industrial engineering manager.

William E. Jennings has been appointed manager of Allied Chemical and Dye Corp.'s Fiber Application Research Laboratory, Chesterfield Plant, Hopewell, Va.

Dr. Robert T. Armstrong has been elected vice president-technical director of Celanese Corp. of America.

J. Warren Kinsman, vice president and member of the board of directors of the Du Pont Co., has retired after 40 years with the company.

Lon Nave

Lon Nave has been transferred from American Bemberg's plant in Elizabethton, Tenn. to the company's New York sales office.

Norbert Lloyd Enrick will discuss CONVENTIONAL AND NEWER METHODS OF ENDS DOWN AND LOOM STOP TESTING, at the annual convention of the Southern Textile Methods and Standards Association, at Clemson, South Carolina, March 22 and 23, 1956. He will also attend the chairmanship of the technical sessions program of the annual convention of the Textile Division, American Society for Quality Control, to be held February 13 to 15, at the Institute of Textile Technology, Charlottesville, Virginia. He is known to our readers from his popular series on *Quality Control through Statistical Methods* and *Modern Mill Controls*, now available in bound form from this Magazine.

Edward M. Fuller, secretary-treasurer and director of Greenwood Mills, Inc., has been appointed chairman of the Committee on Arbitration of the National Federation of Textiles.

Marvin McCall has been appointed vice president and general manager of American Moistening Co., Charlotte, N. C.

W. E. Stubbins

William E. Stubbins has been made New England representative for Van Vlaanderen Machine Co., Paterson, N. J.

Henry A. Reinhardt has been elected vice president for manufacturing of Bigelow-Sanford Carpet Co., Inc.

Virgil W. McDaniel has been named division president of Interchemical Corp.'s Cotan Division, Newark, N. J.

John R. McCauley has joined the application engineering staff of Wheelco Instruments Division, Barber-Colman Co., Rockford, Ill.

T. R. Miller has been made director of development of Carbide & Carbon Chemicals Co., Division of Union Carbide & Carbon Corp.

D. G. Carmichael has been appointed chief consulting chemist for Eastman Chemical Products, Inc.

W. I. Galliher, vice president and director for Columbia-Southern Chemical Corp., has retired. **Chris F. Bingham,** formerly director of sales, will succeed Mr. Galliher as vice president. Other changes include the appointments of **H. W. Gleichert** as vice president of market research and development; **W. F. Newton** as director of sales; and **P. A. Fedor, Jr.,** as assistant director of sales.

J. W. Furr

James W. Furr has been transferred from North American Rayon Corp.'s Greensboro office to the company's New York sales office.

Dr. Claudius T. Murchison, economic adviser to the American Cotton Manufacturers Institute, will retire from active industry service early in 1956.

E. L. Meadows has been appointed supervisor, Marketing Information Services, for Carbide and Carbon Chemicals Co., a division of Union Carbide and Carbon Corp.

Rupert Riley has joined the sales division of Pneumafil Corp., Charlotte, N. C.

American Viscose Corp. announces two appointments in its Marcus Hook plant: **G. William Byers** as head of the weaving division, and **Warren K. Simons** as head of the staple technical sales division.

Raymond W. Jacoby, consultant with Ciba Co., Inc., New York, has been reelected president of the American Association of Textile Chemists and Colorists.

Miss DeAlva Stewart has been made merchandise coordinator for American Rayon Institute, Inc.

R. L. Hock has been appointed manager of American Cyanamid's Fortier plant at New Orleans, La.

James F. Cairns and **Robert A. Jones** have been appointed sales representatives for the Textile Chemicals Division of the Nopco Chemical Co.

H. M. Jackson has been made southern representative for Whitinsville Spinning Ring Co.

(Continued on Page 85)

U. S. MAN-MADE FIBER PRICES

This schedule lists the prices of yarns, staple and tow as reported by the producers in January, 1956. All prices are given as subject to change without notice.

RAYON FILAMENT YARN

American Bemberg

Current Prices

Regular Production Reel Spun Yarn

Den/Fil	No Twist Skeins	Twisted* Skeins & Cones	High Twist Skeins & Cones 8½ Turns	12 or 15 Turns	18 Turns
40/30	$1.45	$1.75			$2.08
50/36	1.20	1.35			1.72
65/45	1.10	1.25		$1.48	1.58
75/60**	1.00	1.12		1.37 $1.37	1.49
100/74**	.90	1.02		1.27 1.27	1.38
125/60		.99	$1.05		
150/120	.89	.96	1.08 1.25		
300/225		.87½		1.00	

* Twisted includes twists up to 6 turns on 40 and 50 denier, and up to 5 turns on heavier deniers.
** Spun dyed black 15¢ per lb. extra.

"44" HH Spool Spun Yarn

Den/Fil	No Twist Tubes	No Twist Beams	5 Turn Beams	5 Turn Cones	12 Turn Beams	12 Turn Skeins & Cones	15 Turn Skeins & Cones
40/30	$1.25	$1.25					
50/36	1.00	1.00					
65/45	1.04					$1.42	
75/45**	.94	.94	$1.05	$1.05	$1.31	1.31	$1.39
75/54	.92						
100/60**	.85	.85	.99	.99	1.23	1.23	1.23
150/90***	.75		.79	.87		1.15	1.15
150/120	.79			.91			

** Bemberg Solution Dyed yarns are spun in 75/45 and 100/60 only. Black 15¢ extra; all other colors 35¢ extra.
*** Spun dyed black 15¢ per lb. extra.

Short Nubbi Yarn

Code	Den/Fil	No Twist Skeins	2½ Twist Skeins	2½ Twist Cones	5 Twist Skeins	5 Twist Cones	8½ Twist Skeins & Cones
1516	150/90	$1.04			$1.12	$1.12	$1.24
1517*	150/90	1.04			1.12	1.12	1.24
2000	200/120	.82			1.02	.92	
2025**	200/120	.82			1.02	.92	
3000	300/180	.82	$1.02	$ .92			
4000	400/224	.82	1.02	.92			
6000	600/360	.82	1.02	.92			
8000	800/450	.82	1.02	.92			

* Code 1517 can be run in warp or filling.
** Code 2025-Softer than 2000.

Terms: Net 30 days f.o.b. Shipping Point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River Minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b. delivery point.

American Enka Corp.

Current Prices

Standard Quality Yarns

Den./Fil.	Luster	Turns	Weaving Cones	Weaving Beams	Skeins	Cakes*	Knitting Cones
50/18	E	5 S					1.51
75/10	B	3 S&Z				1.03	
75/18	E	4 S					1.17
75/30	B	4 S	1.12	1.12		1.03	1.12
75/30	B	8 S	1.17		14M 1.32 18M 1.27		1.17
75/45	P,E	5 S	1.12	1.12		1.03	1.12
100/14	B	3 S&Z				.91	
100/40	B,E	12 S					1.17
100/40	P,E	5 S&Z					.99
100/40,60	B,P	2.5S&Z	.99	.99		.91	.99
100/60	E	2.5S	1.01	1.01		.93	
125/40	E	3 S&Z	.91				.91
150/40	B,P,E	2.1S&Z	.86	.86	Long .89 Short .94 Long .95 Short 1.00	.81	.85
150/40	B	8 S	.92				
150/90	E	2.1S	.87	.87		.82	
200/40	P	3 Z					.79
250/60	P,E	2.4Z					.72
300/50	B,E	3 S	.70	.70			
300/60	B,P,E	2.1S&Z	.70	.70	(8M) .73	.68	.70
300/60	B	3.5S&Z	.70	.70		.68	
300/60	B	4.3S	.73	.73		.71	
300/60	B	7 S	.80				.80
300/40,120 H.T.	B	2.5S	.72	.72			
450/80	B	3 S	.67	.67		.65	
600/80,120	B,E	3 S	.66	.66		.64	
900/120	B	3.4S	.65	.65		.63	
900/120 H.T.	B	3.4S	.67	.67		.65	

B—Briglo P—Periglo (semi-dull) E—Englo (dull) H.T.—High Tenacity.
* Add 1¢ per pound on 3-lb. knotless cakes, all deniers.

"Jetspun" Colored Yarns

Den/Fil.	Tenacity	Turns	Weaving Cones	Beams	Cakes	Colors
100/40	Regular	2.5S	1.34	1.34		All
100/60	Regular	4 S&Z			1.26	All
150/40	Regular	2.1S	1.21	1.21		All
300/40	Regular	3.4S	1.05			All
450/80	Regular	3.0S	1.02			All
600/80	Regular	3.4S	1.01			All
900/120	Regular	3.4S	1.00			All
300/40	High	3.4S	1.07			All
600/80	High	3.4S	1.03			All
900/120	High	3.4S	1.02	1.02		All

Terms: Net 30 days F.O.B. Enka, North Carolina or Lowland, Tennessee. Minimum common carrier transportation charges prepaid to first destination on or east of the Mississippi River.

American Viscose Corp.

Effective January 23, 1956

Graded Yarns

Denier	Filament	Type	Short Skeins	Long Skeins	All Cones Beams Tubes	Cakes
50	20	Bright & Dull	$	$1.54	$1.51	$1.40
60	10	Bright	....	....	1.36	1.25
75	10-30	Bright	1.19	1.15	1.12	1.03
75	30	Dull	....	....	1.12	1.03
100	14-40	Bright	1.07	1.02	.99	.91
100	60	Dull	....	....	1.01	.93
150	24-40-60	Bright & Semi-Dull	.94	.89	.86	.81
150	40	Dull	....	....	.86	.81
150	90	Dull	....	....	.87	.82
200	10*-44	Bright	.87	.82	.79	.75
250	60	Semi-Dull & Dull	.79	.75	.72	.70
300	44	Bright & Dull	.76	.73	.70	.68
300	234	Dull	....	....	.72	.70
450	100	Bright	....	.69	.67	.65
600	100	Bright	....	.68	.66	.64
900	60-100-150	Bright	....	.67	.65	.63
1200	75	Bright	....	.64	.62	....
2700	150	Bright	....	.67	.65	....

Extra Turns Per Inch

*75	30	Bright 6-Turns	$1.31	$1.27	$1.24	$
100	40	Bright 6-Turns	1.19	1.14	1.11	1.03
150	40	Bright 6-Turns	1.04	.99	.96	.91
300	15	Bright 5-Turns	....	....	.75	....
300	44	Bright 6-Turns	....	.83	.80	.78
600	30	Bright 5 Turns	....	.73	.71	.69

Rayflex Yarns

150	60	Rayflex	$	$	$ .89	$ .84
300	120	Rayflex	....	....	.72	.70
450	120	Rayflex	....	....	.69	.67
600	234	Rayflex	....	....	.68	.66
900	350	Rayflex	....	.69	.67	.65

Thick and Thin Yarns

150	40	Bright & Dull	....	....	1.10	....
150	90	Bright & Dull	....	....	1.10	....
200	75	Bright & Dull	....	....	1.02	....
300	120	Bright & Dull	....	....	.92	....
450	100	Bright & Dull	....	....	.89	....
490	120	Bright & Dull	....	....	.92	....
900	350	Dull	....	....	.97	....
920	120	Bright & Dull	....	....	.97	....

Colorspun Yarns

Currently producing 150/30 and 300/60 regular tenacity and 900/234 Rayflex at premiums of $.35 per pound.
* New sizes.

Olen F. Marks, formerly connected with Industrial Rayon Corp., has joined the Textile Research Dept., School of Textiles, N. C. State College.

H. A. Molteni

Henry A. Molteni has been appointed plant manager in charge of all plant operations of Onyx Oil & Chemical Co.

Kenneth H. Barnard has been appointed to the faculty of New Bedford Institute of Textiles and Technology as visiting professor.

George F. McRoberts has been made advertising manager for the Whitin Machine Works. Succeeding him as superintendent of Erectors and Factory Building Schedules is **Thomas P. O'Connell.**

Oliver M. Morgan has been made director of chemical sales and **Harold L. Rieg** as director of dyestuff sales and branch operations, National Aniline Division, Allied Chemical & Dye Corp.

Assets of **Clinton Foods'** corn processing division, Clinton, Iowa, will be sold to Standard Brands, Inc., according to the terms of a sales agreement jointly announced recently by the companies. The proposed sale will be submitted for approval of Clinton Foods' stockholders early this year.

The Schwarzenbach Huber Co. has formed its own organization to distribute its fabrics nationally to wholesale and retail trade and to decorative fabric jobbers.

Albert W. Metzger has been made sales promotion manager, Indian Head Mills, Inc.

DEATHS

Henry E. Stehli, 53, chairman of the board of Stehli & Co., Inc., on December 8.

George L. Baxter, 59, director and sales manager of Bradford Dyeing Association, on December 9.

Herman Cone, 60 president and chairman of the board of Cone Mills Corp., on December 10.

Vincent Lyons, 48, director of press relations of Celanese Corp. of America, on November 14.

Viscose Filament Yarns

The following deposit charges are made on invoices:

Metal Section Beams	$170.00 each
Wooden Section Beams	55.00 each
Wooden Section Beam Crates	30.00 each
Metal Section Beam Racks	75.00 each
Metal Tricot Spools—14" flange	30.00 each
21" flange	60.00 each
Metal Tricot Spool Racks—14" flange	135.00 each
21" flange	100.00 each
Wooden Tricot Spool Crates	20.00 each
Metal Tricot Beams—(32" flange)	150.00 each
Metal Tricot Beam Racks—(32" flange)	75.00 each
Cloth Cake Covers	.05 each

Same to be credited upon return in good condition—freight collect.
Terms: Net 30 days.

Celanese Corp. of America

Current Prices
Effective January 26, 1955

Den. Fil. Twist	Beams	Cones	Cakes	Non Shrunk Tubes
75/30/3 Bright	...	$1.06	$.98	....
100/40/3 Bright	...	.91	.86	....
100/40/5 Bright	...	.97	.92	....
100/60/3 Bright	...	.92	.87	....
150/40/3 Bright	$.84	.82	.77	....
150/40/5 Bright	...	.86	.81	....
150/40/8 Bright	...	.92	.87	....
150/40/0 Bright (Non Shrunk)	...	.66	....	....
300/50/3 Bright	.69	.68	.66	....
300/50/0 Bright (Non Shrunk)	...	.60	....	....
100/60/5 Dull	...	.97	.92	....
100/60/0 Dull	...	.88	....	....
150/40/3 Dull	...	.82	.77	$.73
150/40/0 Dull (Non Shrunk)	...	.66	....	....
150/90/3 Dull	...	.85	.80	....
250/60/0 Dull (Non Shrunk)	...	.64	....	....
250/60/3 Dull	...	.72	....	$.67

#52 Thick and Thin Rayon

	Beams	Cones	Cakes	Non Shrunk Tubes
150/60/3 Bright	...	$1.10	....	....
450/120/3 Bright	...	.89	....	....

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices
Effective January 23, 1956

Bright and Dull

Den.	Fil.	Turns/Inch Up to		(A) Cones, Beams, Tubes	Skeins	Cakes
40	20	3	Textile "Cordura"	$1.90	1.90	$1.85
50	20	3		1.58	1.58	
50	20	3	Textile "Cordura"	1.60	1.60	1.55
50	35	3	Textile "Cordura"	1.65	1.65	1.60
75	10	3		1.12	1.15	1.03
75	15	3		1.12	1.15	1.03
75	30	3		1.12	1.15	1.03
100	15	3		.99	1.02	.91
100	40	3		.99	1.02	.91
100	60	3	Bright	.99	1.02	.91
100	60	3	Dull	1.01	1.04	.93
125	50	3		.91	.93	.85
150	40	3		.86	.87	.81
150	60	3		.86		
150	60	3	Textile "Cordura"	.87	.88	.82
150	90	3	Dull	.87	.88	.82
150	100	3	Dull	.87	.88	.82
200	35	3		.79	.81	.75
300	20	3		.70	.73	.68
300	50	3.5		.70	.73	.68
300	120	3	Textile "Cordura"	.71	.74	.69
450	72	3		.67	.69	.65
600	96	3		.66	.68	.64
600	240	3	Textile "Cordura"	.67	.69	.65
900	50	3		.65	.67	.63
900	144	3		.65	.67	.63
1165	480	3	Textile "Cordura"	.65	.65	.62
1800	100	3		.65		
2700	150	3		.65		
5400	300	3		.72		

Thick and Thin

150	90	3	##7	1.10	1.11	1.10
150	90	3	##19	1.10	1.11	1.10
200	80	3	##7	1.02	1.03	1.02
200	90	3	##19	1.02	1.03	1.02
450	100	3	##7	.89	.90	.89
1100	240	3	##50	1.32		1.32
2200	480	3	##50	1.14		1.14

Fiber E

300	50	2½	.88		
900	50	2½	.83		
900	90	2½	.83		
2700	150	2½	.88		
2700	270	2½	.88		
5400	540	2½	.88		

(A) 2¢/lb. additional for cones less than 3# and tubes less than 2#.
Terms: Net 30 days.

Prices are quoted F.O.B. Shipping Point—lowest cost of transportation allowed or prepaid. To points west of the Mississippi lowest cost of transportation allowed or prepaid to Mississippi River crossing.

Industrial Rayon Corp.

Effective January 27, 1956

Bleached Yarns

Denier	Filament	Turns per In.	Type	2.8 Lb. Cones	4.4 Lb. Cones	Beams	2.2 Lb. Tubes	4.4 Lb. Tubes
100	40	2.5 "S"	Bright	.99		.99		
150	40	2.5 "S"	Bright	.86		.86		
150	40	2.5 "S"	Luster #4	.86		.86		
150	40	2.5 "S"	Bright intermediate strength	.87				
200	20	2.5 "S"	Bright	.79				
200	40	2.5 "S"	Bright	.79				
300	44	2.5 "S"	Bright	.70		.70		
300	80	2.5 "S"	Bright	.70		.70		
300	80	2.5 "S"	Luster #4	.70		.70		
300	80	2.5 "S"	Bright extra strong	.72		.72		
450	60	2.0 "S"	Bright		.67	.67		
600	90	1.5 "S"	Bright		.66	.66	.66	.66
900	50	2.0 "S"	Bright	.65	.65	.65	.65	.65
900	150	1.5 "S"	Bright	.65	.65	.65	.65	.65

Luster #4 is semi-dull.

Standard skein lengths at 2,100 yards for 900 denier, 3,200 yards for 600 denier, 4,400 yards for 450 denier, and 6,500 yards for 300 denier —all at 2¢ per pound over cone prices.

North American Rayon Corp.

Current Prices
Effective January 24, 1956

First Quality Yarns	Den/Fil	Twist	Cones: Knitting*, Jacquard and Velvet Cones	Cones: No Twist Knitting Cones	Cones: Beams, Tubes** and Weaving Cones	Untreated Cakes
	75/30	3.5			$1.12	$1.03
	75/30	7			1.25	
	75/30	15			1.32	
Normal	75/30	20			1.35	
Strength Yarns	100/40/60 Brt.	3.5			.99	.91
NARCO	100/40/60	12			1.17	
	125/52	3	$.91		.91	.85
	125/52	10			1.08	
	150/42	3	.85		.86	.81
	150/42	0		$.66		
	150/60	3			.86	
	300/75	3	.70		.70	
	300/75	0		.60		
	300/75	6			.80	
	600/98	3	.66		.66	
	900/46	2.5	.65		.65	
	1800/92	2.5	.65		.65	
Semi-High	300/75 Brt.	6			.81	
Strength Yarns NI-NARCO	300/75	3			.71	

* Oiled Cones .01 per pound extra for Graded Yarns only.

** 1 lb. tubes $.02 per pound extra for Graded Yarns only.

Terms: Net 30 days f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b. delivery point.

RAYON HIGH TENACITY YARN and FABRIC

American Enka Corp.

Effective January 26, 1956

Tempra (High Tenacity)

Denier	Elongation	Beams & Cones
1100/480	Low	$.67
1230/480	High	.67
1650/720	Low	.64
1820/720	High	.64
2200/960	High & Low	.63

Suprenka (Extra High Tenacity)

1100/480	Low	.70
1650/720	Low	*.69
1900/720	High	.69
2200/960	Low	.68

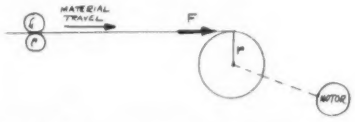
* Beams Only.

Terms: Net 30 days, f.o.b. Enka, North Carolina, or Lowland Tennessee; minimum freight allowed to first destination east of the Mississippi River.

Drives

(Continued from Page 72)

To maintain a constant force F at the surface of the beam for constant material surface speed, it is necessary to provide increasing motor torque and decreasing motor speed for increasing beam diameter. This is accomplished readily by maintaining



Motor torque = $K\phi I_A$ = load torque = Fr
For constant I_A and constant F, ϕ varies directly as the buildup r

Fig. 7B

the motor armature current constant while varying the motor shunt field excitation as a function of beam build-up. This accuracy of tension control during beam build-up is determined by the ability of the regulator to maintain a constant current during this condition.

Viscuous Liquid Pumps

In the production of film or synthetic fiber from fluids containing cellulose or polymer, it is frequently necessary to maintain pressure in a pipe supplying the fluid to the process at a fixed level. In the pumping of most fluids, this is easily accomplished by using throttling or bypass valves actuated by the pressure in the line. Often, however, obstructions in the line of flow, such as valves, cause precipitation of the fluid resulting in freezing of valves and degradation of product. Therefore, controlling the speed of the positive displacement pump discharging fluid into the supply line.

Any change in the rate of flow out of the supply pipe because of variations in the process demands must be accompanied by an immediate change in pump speed; this is necessary if a constant pressure is to be maintained since the pump is of a positive displacement type and the system provides no compressible storage.

A successful system for controlling these pump speeds has been an adjustable voltage drive, the excitation of the generator controlled by a high gain precision electronic regulator. The input circuit of the regulator consists of a feedback signal voltage produced by a tachometer generator driven by the pump or pump motor, bucked against a reference voltage signal provided by an electronic controller activated by a pressure sensitive transducer located at the discharge port of the pump. The block diagram for this system is shown in Fig. 8.

(Continued on Page 89)

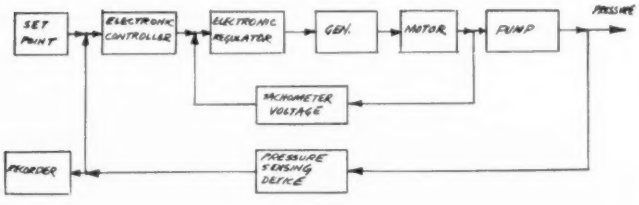


Fig. 8

American Viscose Corp.

Effective January 19, 1956

Super Rayflex

Den.	Fil.	Twist	Turns	Beams	Cones
1650	980	O		$.69	$.69
1650	980	Z	4.1	.69	...

Tire Yarn

1100	490	Z	3.2	.67	...
1650	980	Z	3.2	.64	...
1650	980	O	...	.64	.64
2200	980	O	...	.63	.63

High Strength

1150	490	Z	2.5	.67	.67
1230	490	Z	3.6	.67	.67
1650	980	Z	3.5	.64	.64
1875	980	Z	3.6	.64	.64

Tire Yarn and High Strength Yarns are sold "Not Guaranteed for Dyeing."

Tire Fabric

1100/490/2	$.77
1650/980/2	.725-.76*
2200/980/2	.735

* Price determined by production factor.

Super Rayflex Fabric—add .03 to the above fabric prices.

The following deposit charges are made on invoices:

Beams	$55.00 each
Crates	30.00 each
Fabric Shell Rolls	3.50 each

Same to be credited upon return in good condition—freight collect.

Terms: Net 30 days.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Super Cordura"

(all packages)

1100	480	2	$.76
1250	480	2	.76
1650	720	2	.69
1900	720	2	.69
2200	960	2	.68
2450	960	2	.68

Beams containing ends of direct dyed yarn $3.30 per end extra.

Terms: Net 30 days.

Prices are quoted F.O.B. shipping point—lowest cost of transportation allowed or prepaid. To points west of the Mississippi lowest cost of transportation allowed or prepaid to the Mississippi River crossing.

Industrial Rayon Corp.

Effective January 27, 1956

Unbleached Bright High Tenacity Yarns

Den.	Fil.	Turns Per In.	4.4 Lb. Cones	Beams	2.2 Lb. Tubes	4.4 Lb. Tubes
1100	480	1.5 "Z"	.67	.67	.67	.67
1650	720	1.5 "Z"	.64		.64	.64
2200	720	2.0 "Z"	.63			
3300	1440	1.5 "Z"	.64		.64	.64
4400	1440	2.0 "Z"	.63		.63	.63
4400	2000	1.5 "Z"	.63		.63	.63

Standard skein lengths at 2,100 yards for 900 denier, 3,200 yards for 600 denier, 4,400 yards for 450 denier, and 6,500 yards for 300 denier —all at 2¢ per pound over cone prices.

900 denier 6 turns—Plus 8¢ for cones.

900 denier 6 turns—Plus 8¢ for cones.

Luster #4 is semi-dull.

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River.

North American Rayon Corp.

Super-Narco

High Strength Yarns—	Super-Narco Twist	Cones	Beams
1650	3Z		$.64
1850	3Z	$.64	
Super High Strength Yarns—			
1650	1.5Z	.69	.69
1650	...	...	.77.5

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b delivery point.

ACETATE FILAMENT YARN

American Viscose Corp.

Current Prices

Effective December 20, 1955

Bright and Dull

* Intermediate Twist

Denier & Filaments	Cones & 4-6 Lb. Tubes	Twister Tubes	Warps	Spinning Cones	Twist Warps
55/14	$.99	$.97	$1.00	$.93	$.94
75/20	.95	.93	.96	.89	.90
100/28	.91	.89	.92	.85	.86
120/32	.82	.80	.83	.76	.77
150/41	.74	.73	.75	.69	.70
200/54	.70	.68	.71	.66	.67
300/80	.66	.64	.67	.62	.63

* Standard Twist 2¢ additional.

Celanese Corp. of America

Current Prices

Effective December 19, 1955

Bright and Dull

Denier and Filaments	Intermediate Twist 4 & 6-Lb Cones	Beams	4 & 6-TM Tubes	4-Pound Cheeses	Spinning Twist Cones	Beams	O Twist Tubes
45/13	$1.12	$1.13	$	$	$	$1.07	$
55/15	.99	1.00	...	...	.93	.94	.875
75/20	.95	.96	.93	...	.89	.90	.79
75/50	.97	.98	.95	...	...	...	.84
100/26-40	.91	.92	.89	...	.85	.86	.77
120/40	.82	.83	.81	...	.76	.77	...
150/40	.74	.75	.74	.74	.69	.70	.66
200/52	.70	.71	.70	...	.66	.67	...
300/80	.66	.67	.66	...	.62	.63	.60
450/120	.64	.65	.64	...	.60	.61	...
600/160	.62	.63	.62	...	...	...	...
900/80-240	.60	.61	.60	...	...	...	.58

3 to 5 Turns on Cones or Beams ... $.02 Additional

150 Denier 12 TM Tubes ... .73

55/0/15Dull Tricot Beams ... .935

2-Pound Cheeses ... .01 Less Than 4-Pound Cheeses

2-BU and 4-BU Tubes ... Same Price as 4 and 6-Lb. Cones

Terms: Net 30 days. Prices per pound F.O.B. shipping point, lowest transportation allowed to destination in U.S.A. east of the Mississippi River.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Acetate

Denier & Filament	Low Twist 2 & 4 Lb. 5/8" Tubes	Low Twist 4-6 Lb. Twist Tubes	Zero Twist Cones	Zero Twist Beams	Intermediate Twist Cones	Intermediate Twist Beams	Intermediate Twist Tubes	Intermediate Twist Beams
45/13/24			1.12	1.13		1.07	1.05	
55/18/24			.99	1.00		.94	.875	.935
75/24		.93	.95	.96	.89	.90	.79	.89
75/50		.95	.97	.98			.84	
100/32		.89	.91	.92	.85	.86	.77	
100/66			.93	.94			.79	
120/40/50		.81	.82	.83	.76	.77	.73	
150/16			.78	.79			.69	
150/40		.74	.74	.75	.69	.70	.66	.69
200/60		.70	.70	.71	.66	.67	.65	
240/80			.68					
300/40/80	.66	.66	.66	.67	.62	.63	.60	.62
450/120	.64	.64	.64	.65	.60	.61		
600/80/160	.62	.62	.62	.63	.59	.60		
800/40								
900/44/70/240	.60	.60	.60	.61	.59	.60	.58	
1800/88	.61	.61	.61	.62	.60	.61	.59	
2700/132/210	.61	.61	.61	.62	.60	.61		
3200/160/210	.61		.61	.62				
5400/420					.60	.61		
6000/744								
12000/1488					.65	.66		

A. 1¼ 5/8" Tubes—add .02 to 2 & 4 lb. 5/8" Tubes Price.

B. Regular Twist (3 thru 5 t.p.i.)—add .02 to Intermediate Twist Price.

C. 2 lb. Twisted Tubes—.01 less than 4 & 6 lb. Twisted Tubes on 150-200-300 Denier Intermediate Twist.

Color-Sealed

Denier	Intermediate Twist Twisted Tubes 2 Lb.	4 & 6 Lb.	Cones	Beams	Low Twist Cones	Beams	Zero Twist Tubes	Beams
55/18-24			1.37	1.38	1.31	1.32	1.245	1.315
75/24			1.34	1.35	1.28	1.29	1.18	1.28
100/32	1.26	1.26	1.28	1.29	1.22	1.23	1.14	
150/40	1.10	1.11	1.11	1.12	1.06	1.07	1.03	1.06
200/60	1.04	1.05	1.05	1.06	1.01	1.02	1.00	
300/40-80	1.00	1.01	1.01	1.02	.97	.98	.95	.97

A. Regular Twist—add .02 to intermediate twist prices.

Black

Denier	Intermediate Twist 2 & 4 Lb. 5/8" Twisted Tubes	4 & 6 Lb. Twisted Tubes	Cones	Beams	Low Twist Cones	Beams	Zero Twist Tubes	Beams
55/18-24			1.17	1.18	1.11	1.12	1.045	1.115
75/24		1.12	1.14	1.15	1.08	1.09	.98	1.08
100/32		1.06	1.08	1.09	1.02	1.03	.94	
150/40		.91	.91	.92	.86	.87	.83	.86
200/60		.85	.85	.86	.81	.82	.80	
300/40-80	.81	.81	.81	.82	.77	.78	.75	.77
450/120	.79		.79	.80	.75	.76		
600/80-160	.77		.77		.73			
800/40								
900/44-70-240								
1800/88	.74		.74		.73			
2700/132-210	.74		.74		.73			
3000/210								
3200/160	.74		.74					
5400/420					.73			
6000/744								
12000/1488					.78			

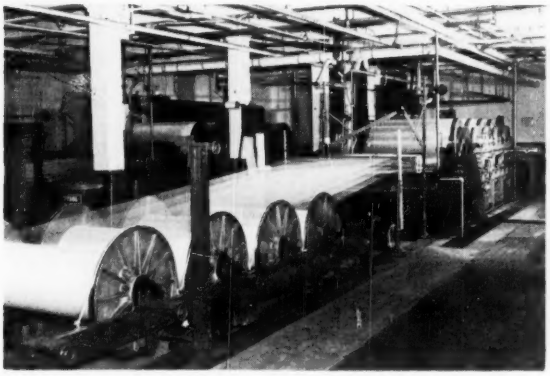
A. Regular Twist (3 thru 5 t.p.i.)—add .02 in intermediate twist prices.

B. 2 lb. Twisted Tubes are the same as 4 & 6 lb. except on 150-200 and 300 denier intermediate twist where the price is .01 less.

C. 1 lb. 3/8" Tubes—add .02 to 2 and 4 lb. 5/8" Tubes.

Terms: Net 30 Days. Domestic Prices are quoted F.O.B. Shipping Point—lowest cost of transportation allowed or prepaid. To points west of Mississippi, lowest cost of transportation allowed or prepaid to Mississippi River crossing.

Price subject to change without notice.



This slasher is equipped with multi-motors driven and controlled by electronic drives which start, accelerate and control speed to maintain continuous, high-speed operation

Any change in the pressure in the supply pipe is immediately reflected in a change in the reference voltage through the action of the transducer and electronic controller. The electronic regulator then immediately acts to change the excitation of the adjustable voltage generator providing power for the pump motor, and a change in pump speed results to correct the error in pressure.

Because of the nature of the hydraulic system involved here, extremely rapid errors in magnitude can form. Unless the entire drive system can respond as rapidly as an error can form, it will be necessary to throttle the action of the various controlling media so as to tolerate a certain envelope of error in pressure, or else the entire system will hunt or surge, with the pressure going to dangerous extremes. In order to provide stable operation of a system which has certain slow response elements in the entire control loop, it may be necessary to throttle the action of the controlling system to a point where the system does not try to correct for the smaller magnitude quickly formed-errors. Instead, it tolerates these and responds only to slowly-formed drift errors in the system.

Because this is undesirable, the alternative is to make all elements of the system as fast as possible. This includes the pressure transducer, the electronic controller, the electronic regulator, the generator field time constant, and the time constant of the motor and load which includes inertia and armature circuit resistance considerations. The regulator in this application must be lightning fast if satisfactory stable operation is to be maintained.

It is in such applications as this that the versatility of the electronic regulator with its high gain for accuracy and its high speed of response for stability is demonstrated so dramatically.

Rebeamer Drive

A rebeamer drive provides an example of the accurate and effective correlation existing between an electrical drive system designed with the aid of the analog computer and the actual field performance of the system.

The rebeamer provides the means for repairing damaged threads anywhere within a beam of material. The drive is basically a two beam carriage designed for forward and reverse operation. The

(Continued on Page 93)

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Effective December 19, 1955

Estron Yarn, Bright or Dull — White

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Tubes	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams	Tubes Twist Zero
55/13	$1.01	$0.99	$	$1.00	$0.93	$0.94	$0.88½
75/19	.97	.95	.93	.96	.89	.90	.81
75/49	.99	.97	.95	.98	....	....	....
100/25	.93	.91	.89	.92	.85	.86	.77
120/30	.86	.84	.82	.85	.78	.79	....
150/38	.76	.74	....	.75	.69	.70	.66
200/50	.72	.70	....	.71	.66	.67	....
300/75	.68	.66	....	.67	.62	.63	.60
450/114	.66	.64	....	.65	.60	.61	....
600/156	.64	.62	....	.63	.59	.60	....
900/230	.62	.60	....	.61	....	....	.58
900 & Heavier	....	....	....	....	....	....	.58

Current Prices

Chromspun—Standard Colors (Except Black)

Denier & Filament	Regular Twist Cones	Regular Twist Beams	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams
55/13	$1.39	$1.40	$1.37	$1.38	$1.31	$1.32
75/19	1.36	1.37	1.34	1.35	1.28	1.29
100/25	1.30	1.31	1.28	1.29	1.22	1.23
150/38	....	....	1.11	1.12	1.06	1.07
300/75	....	....	1.01	1.02	.97	.98
450/114	....	....	.99	1.00	.95	.96
900 (230)	....	....	.94	.95	....	....

Current Prices

Chromspun—Black

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist & Spun Twist Beams
55/13	$1.19	$1.17	$1.18	$1.12
75/19	1.16	1.14	1.15	1.09
100/25	1.10	1.08	1.09	1.03
150/38	.93	.91	.92	.87
200/50	.87	.85	.86	.82
300/75	.83	.81	.82	.78
450/114	.81	.79	.80	.76
900 (230)	.76	.74	.75	....

Prices are subject to change without notice.

Prices on special items quoted on request.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in the United States east of Mississippi River. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

RAYON STAPLE and TOW

American Bemberg

Rayon Staple

A-7½ denier ..... $ .40

Terms: Net 30 days, f.o.b. Shipping Point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b. delivery point.

American Viscose Corp.

Effective July 26, 1954

Rayon Staple

	Bright and Dull
Regular	$ .34
Extra Strength	
1.0 Denier	.38
"Viscose 32A"	.38
"Avisco Crimped"	
1.25 Denier	.36
3.0 & 5.5 Deniers	.35
8.0 & 15.0 Deniers	.37
"Avisco Smooth"	
8.0, 15.0 & 22.0 Deniers	.39
Short Staple Blend	.36

Rayon Tow

Grouped Continuous Filaments (200,000 Total Denier)	
1.5, 3.0 & 5.5 Denier Per Filament	.36
9.0 Denier Per Filament	.38
Grouped Continuous Filaments (4400/3000 & 2200/1500)	.65

Prices of other descriptions on request.

Terms: Net 30 days.

Celanese Corp. of America

Current Prices

Rayon Tow

1.5, 3, 5.5 (200,000 total denier) bright	.34
1.5, 3, 5.5 (200,000 total denier) dull	.35

Courtaulds (Alabama) Inc.

Effective November 2, 1953

Rayon Staple

	Bright	Dull
1½ and 3 denier	$.32	$.33

Available in 1⅛", 1-9/16" and 2".

"Coloray" Spun Dyed Rayon Staple

	1½-Den. 1-9/16"	3 Den. 2"	4½ Den. 6"	Price per Lb.
	(Code numbers for color & denier)			
Black	50	60	70	$.37
Tan	52	62	72	.39
Silver Grey	233	933	....	.39
Khaki	51	61	71	.40
Slate Grey	58	68	....	.43
Light Blue	12	47	34	.44
Sulphur	19	44	33	.44
Apple Green	17	45	37	.45
Peacock Blue	222	922	....	.46
Brown	55	65	75	.42
Medium Blue	15	48	35	.48
Dark Blue	16	49	36	.49
Indian Yellow	20	43	32	.49
Pink	21	42	39	.50
Turquoise	56	66	....	.50
Malachite Green	18	46	38	.51
Red	14	41	31	.56
Terra Cotta	8204	8219	....	.39
Medium Brown	8804	8819	....	.39
Hunter Green	5404	5419	....	.49

(In addition to the above, Black is also available in 3 den. 1⅛", 3 den. 1-9/16", 3 den. 2½", 4½ den. 2" and 4½ den. 4").

Terms: Net 30 days, f.o.b. LeMoyne, Alabama. Minimum transportation allowed to points in U.S.A. east of Mississippi River.

The Hartford Rayon Co.

Div. Bigelow-Sanford Carpet Co., Inc.

Rayon Staple

Effective February 1, 1956

REGULAR — 1.5 denier Bright, 1½" and 2" ..... 32¢

VISCALON 44 — 15 denier 3" Dull ..... 39¢

VISCALON 66 (Crimped)

8 denier 2" Bright ..... 35¢

15 denier 3" Bright ..... 35¢

15 denier 3" Dull ..... 35¢

"KOLORLOK"—Solution Dyed Rayon Staple—15 denier 3"

	Bright	Dull
Grey	45¢	45¢
Sandalwood	45¢	45¢
Nutria	45¢	45¢
Light Green	45¢	45¢
Mint Green	45¢	45¢
Champagne	45¢	45¢
Brown	55¢	....
Black	43¢	....

Terms: Net 30 days. Prices are quoted f.o.b. shipping point, lowest cost of transportation allowed, or prepaid. To points West of the Mississippi, lowest cost of transportation allowed to the Mississippi River crossing.

Outlook (Concluded from Page 30)

Tire Cord Outlook — Tire cord and fabric is one of the most important textile industrial markets. It is also one of the most interesting. Past history shows an almost complete displacement of cotton by rayon in this market. More recent past history shows a very rapid increase in the use of nylon at the expense of high tenacity rayon. It seems unlikely that nylon will duplicate the history of rayon. Latest figures on tire cord production suggest a somewhat more stable situation.

First of all, third quarter production showed almost an unchanged total for the market as a whole. Current prospects are for some decline in total volume in 1956. Both original and replacement tire production and sales reached exceedingly high levels in 1955, and at best are likely to show some declines.

Secondly, third quarter output showed greater staying power for rayon than for nylon. Third quarter production of rayon tire cord was slightly below second quarter output; but the production of woven rayon tire cord, which is about 4 times more important, was slightly higher.

On the other hand, third quarter output of cotton and nylon tire cord and fabric was 15% lower than second quarter output. Cotton plays a very small part in this combined figure, and most of the decline undoubtedly was accounted for by nylon.

This suggests strongly that the first period of rapid expansion in the use of nylon tire cord has reached an end. New evaluations will have to be made. Meanwhile, the tenacity of rayon yarns has been increased again, by an amount that may be critical in this market. The present year is likely to bring a new and more careful evaluation of tire cord fibers and fabrics.

ACETATE STAPLE and TOW

Celanese Corp. of America

Current Prices

Staple

Up to and including 8 denier per filament, bright and dull	$.37
All other deniers, bright and dull	.38
35 dpf flat filament staple, bright	.43

Celatow

Up to and including 8 denier per filament, bright and dull	.37
All other deniers, bright and dull	.38

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Effective October 31, 1955

Estron Staple

Deniers per Filament	Bright and Dull
2, 3, and 5	$.32 per lb.

Prices are subject to change without notice.
Prices on special items quoted on request.
Terms: Net 30 days. Payment—U. S. A. dollars.
Transportation charges prepaid on allowed to destination in the United States east of Mississippi River. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

NON CELLULOSIC YARN

ACRYLIC

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Orlon"

	1st Grade	2nd Grade
75 denier, 30 filaments	$2.65	$2.35
100 denier, 40 filaments	2.35	2.10
200 denier, 80 filaments	2.25	2.00

Terms: Net 30 days.
These prices are subject to change without notice. All prices are quoted f.o.b. shipping point.

NYLON

Allied Chemical and Dye Corporation

"Caprolan" Tensile Tough Nylon

Effective December 1, 1955

Heavy Yarns

Denier	Filament	Turn/in.	Type**	Package	Price/lb.
2100	6 d/f	Nominal	HB	Parallel Paper Tube*	$1.38
2500	6 d/f	Nominal	HB	Parallel Paper Tube	1.38
5000	6 d/f	Nominal	HB	Parallel Paper Tube	1.38
15000	6 d/f	Nominal	HB	Parallel Paper Tube	1.38

Terms—Net 30 days.
These prices are subject to change without notice. All prices are quoted f.o.b. shipping point.
Freight equalized with the nearest nylon yarn producing plant by our route.
* Parallel Paper Tubes non-returnable, no charge.
** Type is used to describe luster and tenacity.
Type HB: High Tenacity, Bright.

American Enka Corporation

Nylenka Filament Yarn Prices

Effective December 1, 1955

Denier & Filament	Twist	Luster	Type	Tenacity	Package	Yarn Weight per Package	Price per Pound Std.	Price per Pound Substd.
840/140	0.5Z	Bright	9202	High	Pirns	2 Lbs.	$1.48	$1.35
840/140	0.5Z	Bright	9208	High	Cones	4 Lbs.	$1.48	$1.35
840/140	0.5Z	Bright	9302	High	Beams	As Required	$1.48	$1.35
210/34	0.5Z	Bright	9204	High	Pirns	2 Lbs.	$1.65	$1.55
210/34	0.5Z	Bright	9214	High	Cones	4 Lbs.	$1.65	$1.55
210/32	0.5Z	Bright	9212	High	Pirns	2 Lbs.	$1.65	$1.55
210/32	0.5Z	Bright	9216	High	Cones	4 Lbs.	$1.65	$1.55
200/32	0.5Z	Bright	9802	Normal	Pirns	2 Lbs.	$1.75	$1.55
100/32	0.5Z	Bright	9642	Normal	Pirns	2 Lbs.	$1.90	$1.75
50/13	0.5Z	Semi-dull	9442	Normal	Pirns	2 Lbs.	$2.15	$2.00
40/13	0.5Z	Semi-dull	9428	Normal	Pirns	2 Lbs.	$2.25	$2.05
40/8	0.5Z	Semi-dull	9432	Normal	Pirns	2 Lbs.	$2.25	$2.05
30/8	0.5Z	Semi-dull	9418	Normal	Pirns	1 Lb.	$2.70	$2.55
15/1	0.5Z	Semi-dull	9408	Normal	Pirns	1 Lb.	$6.00	$5.70

Terms: Net 30 days F.O.B. Enka, North Carolina. Freight charges to be equalized with charges from producing points of like materials located nearest to destination.
Pirns charged at $.25 each. Deposit refunded upon return of pirn in good condition. Cones are non-returnable. Beams (Domestic Price) at $220 each. Cradles (Domestic Price) for beams at $50.00 each. (Beams and cradles are deposit carriers and remain property of American Enka Corporation.)

The Chemstrand Corp.

Current Prices

Den.	Fil.	Twist	Type*	Pkge.	Standard Price/Lb.	Second Price/Lb.
10	1	O	SD	Bobbins	$9.00	$8.50
15	1	O	SD	Bobbins	6.00	5.70
15	3	Z	SD	Bobbins	6.00	5.40
20	7	Z	SD	Bobbins	3.50	3.30
30	10	Z	SD	Bobbins	2.70	2.55
30	10	Z	HSD	Bobbins	2.70	2.40
40	7	Z	SD	Bobbins	2.44	2.20
40	13	Z	SD	Bobbins	2.25	2.05
40	13	Z	D	Bobbins	2.35	2.05
50	17	Z	SD	Bobbins	2.15	2.00
70	34	Z	SD	Bobbins	1.90	1.75
70	34	Z	B	Bobbins	1.90	1.75
70	34	Z	HB	Bobbins	2.00	1.85
100	34	Z	HB	Bobbins	1.95	1.75
100	34	Z	SD	Bobbins	1.90	1.75
140	68	Z	SD	Bobbins	1.85	1.70
200	34	Z	B	Bobbins	1.75	1.55
210	34	Z	HB	Bobbins	1.65	1.55
260	17	Z	HB	Bobbins	1.80	1.60
840	140	Z	HB	Beams	1.48	1.35
840	140	Z	HB	Tubes	1.48	1.35

Terms: Net 30 days.
Note: All Standard Quality Yarn—No break.
Bobbins, tubes, beams, and crates for beams become the property of the yarn purchaser. Bobbins are invoiced at 25¢ or 45¢ each, depending on type; tubes are invoiced at 40¢ each; and beams and crates for beams are invoiced at $220 and $25 respectively.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Yarn

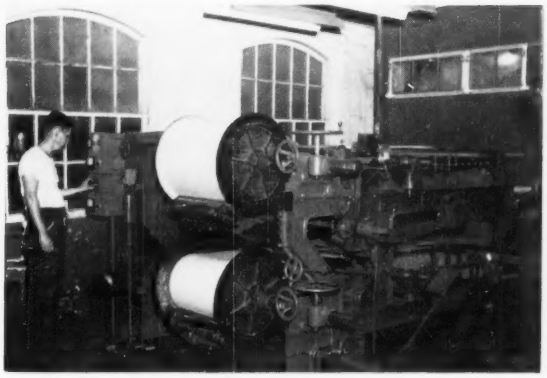
Denier	Filament	Turn/In.	Twist	Type*	Package	1st Grade	2nd Grade
7	1	0	O	200	Bobbin	$10.00	$9.50
10	1	0	O	200	Bobbin	9.00	8.50
12	1	0	O	200	Bobbin	8.00	7.60
12	4	¼	Z	200	Bobbin	8.00	7.20
15	1	0	O	200	Bobbin	6.00	5.70
15	1	0	O	670/680	Bobbin	6.10	5.70
15	3	¼	Z	200	Bobbin	6.00	5.40
20	1	0	O	200	Bobbin	5.00	4.50
20	7	½	Z	200	Bobbin	3.50	3.30
20	7	½	Z	670	Bobbin	3.60	3.30
20	20	¾	Z	209	Bobbin	7.00	...
30	10	½	Z	100/200	Bobbin	2.70	2.55
30	10	½	Z	670/680	Bobbin	2.80	2.55
30	26	½	Z	200	Bobbin	2.85	2.70
40	1	0	O	100/200	Bobbin	4.25	4.00
40	7	½	Z	200	Bobbin	2.44	2.20
40	13	½	Z	100/200	Bobbin	2.25	2.05
40	13	½	Z	400	Bobbin	2.35	2.15
40	13	½	Z	670/680	Bobbin	2.35	2.05
40	34	½	Z	200	Bobbin	2.40	2.20
50	7	½	Z	200	Bobbin	2.35	2.10
50	17	½	Z	200	Bobbin	2.15	2.00
50	17	½	Z	670	Bobbin	2.25	2.00
60	20	½	Z	200	Bobbin	2.00	1.90
70	17	½	Z	100/200	Bobbin	1.90	1.70
70	34	½	Z	100/200	Bobbin	1.90	1.75
70	34	½	Z	300	Bobbin	2.00	1.85
70	34	½	Z	670/680	Bobbin	2.00	1.75
80	26	½	Z	200	Bobbin	1.90	1.75
80	68	½	Z	200	Bobbin	2.00	1.80
100	34	½	Z	100/200	Bobbin	1.90	1.75
100	34	½	Z	300	Bobbin	1.95	1.75
100	34	½	Z	680	Bobbin	2.00	1.75
100	50	½	Z	200	Bobbin	2.00	1.80
140	68	½	Z	100/200	Bobbin	1.85	1.70
140	68	½	Z	300	Bobbin	1.90	1.70
200	20	½	Z	100	Bobbin	1.90	1.70
200	34	¾	Z	100	Bobbin	1.75	1.55
200	34	¾	Z	680	Bobbin	1.85	1.55
200	68	¾	Z	200	Bobbin	1.75	1.55
210	34	¾	Z	300	Bobbin/Beam	1.65	1.55
260	17	1	Z	300	Bobbin	1.80	1.60
400	68	¾	Z	100	Bobbin	1.65	1.50
420	68	¾	Z	300	Bobbin	1.65	1.50
780	51	½	Z	300	Bobbin	1.65	1.50
800	140	½	Z	100	Bobbin	1.65	1.50
840	136	¾	Z	300	Bobbin	1.48	1.35
840	140	½	Z	300	Alum. Tube/Beam	1.48	1.35
Industrial Yarn						**Price/Lb.**	
15120	2520	0	O	300	Paper Tube	$1.38	

These prices are subject to change without notice.
Terms—Net 30 Days.
All prices are quoted f.o.b. shipping point.
Freight equalized with the nearest Nylon Yarn Producing Plant by our route.
Following are invoiced as a separate item:
Bobbins at 25 cents or 45 cents each depending on type.
Aluminum Tubes at 40 cents each.
Beams (Domestic Price) at $220.00 each.
Cradles (Domestic Price) for Beams at $115.00 each.
(Beams and Cradles are deposit carriers and remain the property of E. I. du Pont de Nemours & Co.)

Types

* Type is used to describe luster, tenacity, and size or oil content.
Type 100 Bright, normal tenacity.
Type 200 Semidull, normal tenacity.
Type 209 Semidull, normal tenacity, #S-139 spin finish.
Type 300 Bright, high tenacity.
Type 670 Dull, normal tenacity.
Type 680 Dull, normal tenacity.
** Based on nylon containing 4.5% moisture regain.
Finish content is not included in billed weight.

Drives (Continued from Page 89)



Here two beams on the same slasher are independently powered and controlled by Reliance drives. Use of these drives substantially increased productivity of this machine

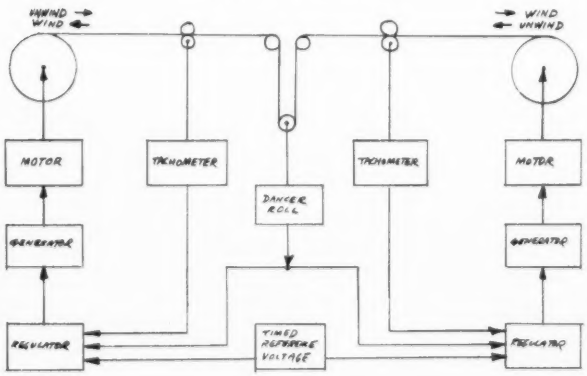
full beam is unwound onto an empty core at constant speed until a yarn breakage detector unit indicates a broken thread. The drive is then automatically and quickly brought to a smooth stop so that the damaged thread may be repaired. Then the operator simply presses the run pushbutton causing the drive to accelerate smoothly back up to the present operating speed. This process is repeated until all of the damaged threads have been repaired. The operator then sets the controls for reverse operation causing the line to run in the opposite direction to rewind the threads back onto the original beam.

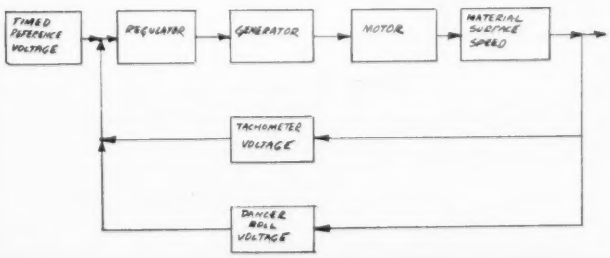
During all of the operating conditions of acceleration, deceleration, beam buildup and build down, and constant running for both forward and reverse directions of material travel, approximately 7 lbs. constant tension must be maintained between the unwinding and winding beams. Fig. 9a is a schematic diagram for the basic system employed, while Fig. 9b is a block diagram for this system.

With the shaft type wind and unwind units used it is necessary to compensate for changes in beam

(Continued on Page 95)

Figs. 9a & 9b (Bottom)





POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Dacron"

Den.	Fil.	Twist	Luster	Type	Tubes 1st Gr.
30	20	0	Dull	5700	$3.45
40	27	0	Semi-Dull	5600	3.00
40	27	0	Dull	5700	3.10
70	34	0	Semi-Dull	5600	2.35
70	34	0	Bright	5500	2.35
70	34	0	Dull	5700	2.45
150	68	0	Semi-Dull	5600	2.25
220	50	0	Bright	5100	2.20
250	50	0	Bright	5500	2.15
1100	250	0	Semi-Dull	5900	1.75
1100	250	0	Bright	5100	1.75

NON CELLULOSIC STAPLE & TOW

ACRYLIC

The Chemstrand Corp.

Current Prices

"Acrilan"

2.0 denier Semi-dull staple and tow	$1.18
3.0 denier Bright & Semi-dull staple and tow	1.12
5.0 denier Bright & Semi-dull staple and tow	1.12
Hi-Bulk staple Semi-dull	1.12

Terms: Net 30 days. Freight prepaid to points east of the Mississippi River.

Carbide and Carbon Chemicals Co.

Div. Union Carbide and Carbon Corp.

Textile Fibers Dept.

Effective November 1, 1955

Dynel Staple

Natural Dynel	
3, 6, 12, and 24 Denier, Staple and Tow	$1.05 per lb.
Whitened Dynel, and Dynel Spun with Light Colors: Blonde, Gray, or Taupe	
3 and 6 Denier, Staple and Tow	1.20 per lb.
Dynel Spun with Dark Colors: Black and Brown	
3 and 6 Denier, Staple and Tow	1.30 per lb.

Prices are quoted f.o.b. South Charleston, W. Va.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Orlon" Acrylic Staple & Tow

Denier	Price 1st Grade
2.0 Denier	$1.30
3.0 Denier	1.25
3.0 Denier Color-sealed Black—Staple only	1.60
4.5 Denier	1.20
6.0 Denier	1.20

Staple Lengths—1½", 2", 2½", 3", 4½".

High Shrinkage Staple same price as Regular Staple.

F.O.B. Shipping Point—Lowest cost of transportation allowed or prepaid. To points West of Mississippi, transportation prepaid or allowed to Mississippi River crossing.

Prices subject to change without notice.

NYLON

American Enka Corp.

Nylenka (Nylon Six Staple)

Semi-Dull	
3 denier, 1⅛", 1½", 2", 2⅜", 3", 4½"	$1.25
Bright	
6 denier, 3", 4½"	1.25
10 denier, 3"	1.20
15 denier, 3"	1.20

Deniers and lengths not listed above are available upon special request.

Terms: Net 30 days F.O.B. Enka, North Carolina. Freight charges to be equalized with charges from producing points of like materials located nearest to destination.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Nylon Staple and Tow

Denier	Length	Type*	Price/Lb.**
1.5	1⅛"—1½"—2"—2½"	100/200	$1.30
1.5	1⅛"—1½"—2"—2½"	101/201	1.32
3.0	1⅛"—1½"—2"—2½"—3"—4½"	100/200	1.25
3.0	1⅛"—1½"—2"—2½"—3"—4½"	101/201	1.27
6.0	1⅛"—1½"—2"—2½"—3"—4½"	100/200	1.25
6.0	1⅛"—1½"—2"—2½"—3"—4½"	101/201	1.27
15.0	1½"—3"—4½"—6½"	100	1.20
15.0	1½"—3"—4½"—6½"	101	1.22

Tow price same as Staple for:

1.5 denier type 200 in 330,000 total denier
1.5 denier type 201 in 350,000 total denier
3.0 denier type 100/200 in 430,000 total denier
3.0 denier type 101/201 in 455,000 total denier
6.0 denier type 100 in 330,000 total denier
6.0 denier type 101 in 345,000 total denier
15.0 denier type 100 in 330,000 total denier
15.0 denier type 101 in 350,000 total denier

These prices are subject to change without notice.

Terms: Net 30 days.

All prices are quoted f.o.b. shipping point.

Freight equalized with Covington, Va. or Enka, N. C. by our route.

Types

* Type is used to describe luster, tenacity, not crimpset, or crimpset.
Type 100 Bright, normal tenacity, not crimpset.
Type 101 Bright, normal tenacity, crimpset.
Type 200 Semi-dull, normal tenacity, not crimpset.
Type 201 Semi-dull, normal tenacity, crimpset.

** Based on nylon containing 4.5% moisture regain.

Industrial Rayon Corp.

Effective November 23, 1955

Nylon Staple

1.5 denier	$1.30 per lb.
2, 3 and 6 denier	1.25 per lb.
8 and 15 denier	1.20 per lb.

Bright and semi-dull, required length.

Terms: Net 30 days f.o.b.

POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

"Dacron" Staple and Tow

Den.	Luster	Type	Staple Length	Tow Bundle	1st Gr.
1.5	Semi-Dull	5400	1½"-4½"	385M	$1.40
3.0	Semi-Dull	5400	1½"-4½"	385M	1.35
4.5	Semi-Dull	5400	1½"-4½"	385M	1.35
6.0	Semi-Dull	5400	1½"-4½"	385M	1.35

F.O.B. Graingers, N. C. Terms: Net 30 Days.

Prices subject to change without notice.

"Dacron" Polyester Fiber billed on Gross Weight basis and contains 1% or less moisture and finish.

Yarn Types

5100 Bright High Tenacity
5600 Semi-Dull Normal Tenacity
5700 Dull Normal Tenacity
5500 Bright Normal Tenacity
5900 Semi-Dull High Tenacity

Tubes are invoiced as a separate item at $.50, $.70, or $.80 each and are returnable for credit.

* Trademark for du Pont's polyester fiber.

POLYVINYL ACETATE

American Viscose Corp.

Effective October 1, 1950

Vinyon Staple

3.0 denier ½" unopened	$.80 per lb.
3.0 denier 1¼", 2" opened	.90 per lb.
5.5 denier 1", 3½" opened	.90 per lb.

Terms: Net 30 days.

Drives (Continued from Page 93)

diameter by automatically adjusting the motor speed in inverse ratio to the beam diameter change. Such a condition is necessary in order to maintain constant web tension at constant line speed for a varying beam diameter.

Synthetic Tire Cord Processing

The processing of some of the fabrics made of synthetic fiber requires that machine speed be closely related to other factors. A case in point is the treating of nylon cord used in tires. Here it is desirable to subject the material being processed to certain degrees of heat for certain periods of time. In order to obtain optimum results, changes in temperature in the critical sections of the machine must be accompanied by proportional changes in line speed. Because of the inherently long time constants associated with temperature change, it is more practical to make machine speed a slave to temperature rather than the other way about. In order to point up the problem here let us assume that only one drive motor is involved, and consider the control system shown in block diagram form in Fig. 10.

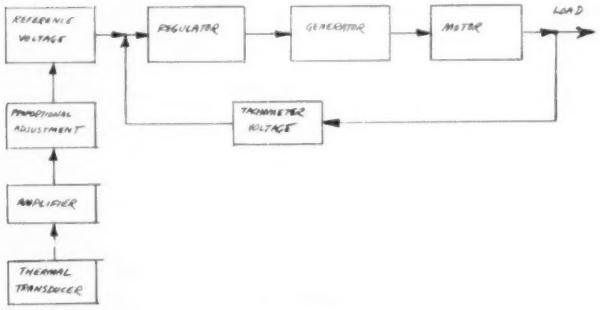


Fig. 10

Obviously, if it is desirable to have the speed of the machine follow the temperature very closely, the simple voltage regulator used in the example of the range drive would not provide adequate accuracy of control. A precision regulator incorporating a high gain amplifier as described earlier would be required. The operator's function, then, is to set the desired ratio of speed to temperature letting the regulator maintain this ratio.

The example of the type of control cited above may appear to be of academic interest only to textile engineers. With many of the problems of dyeing synthetic fibers yet unsolved, however, it is easily conceivable that the relating of speed to strength of solution or temperature or any number of other factors may some day become commonplace in the textile field.

With increased complexity of drive systems, it follows that the reliability of these systems must also increase. The manufacturer of electrical equipment can contribute to this reliability through proper design of basic products and drive systems while the user of electrical equipment can contribute to increased reliability by training maintenance personnel and improving established maintenance policies.

With the need for high quality low cost fabrics

(Continued on Page 96)

PROTEIN

Charlotte Fibre Co.

Exclusive Agents for Snia Viscosa Italy "Merinova"
Effective January 1, 1954

Merinova Staple

3 Denier 1-9/16", 2-1/2" and 3"	$.81
5 Denier 1-1/16", 1-9/16", 2-1/2", 4" and 6"	.81
9 Denier 4"	.81
18 Denier 6", 2-1/2"	.81
60 Denier 14"	.85

Other lengths or deniers can be produced as requested.
Solution-dyed Merinova staple fiber.

Light colors	.90 per lb.
Medium colors	.95 per lb.
Dark colors	1.00 per lb.

French Combed Tops 1.10

Terms: Net 30 days. All prices are duty paid, landed free, freight prepaid to rail point nearest destination.

Virginia-Carolina Chemical Corp.

Fiber Division
Effective January 15, 1951

Vicara Staple

	Standard Crimp	Highly Crimped
3 Denier	$1.00 per lb.	$1.05 per lb.
5 Denier	1.00 per lb.	1.05 per lb.
7 Denier	1.00 per lb.	1.05 per lb.

Bleached Vicara Staple

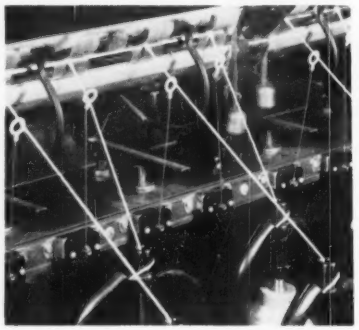
	Standard Crimp	Highly Crimped
3 Denier	$1.10 per lb.	$1.15 per lb.
5 Denier	1.10 per lb.	1.15 per lb
7 Denier	1.10 per lb.	1.15 per lb.

Staple length ½ to 6 in.
Supplied in staple lengths or as continuous tow (270,000 filaments).
Terms: Net 30 days.
Prices f.o.b. Taftville, Conn. on 10% moisture regain basis.

Avisco Ups Rayon Tire Yarn Prices

American Viscose Corp. has increased prices of rayon tire yarn three to five cents per pound effective January 19. In announcing the new prices, George L. Storm, vice president, said the changes were necessary to offset increased manufacturing and raw materials costs.

Stop Motion for Roving Frames



Adams, Inc., Greenville, S. C. has available a stop motion device for roving motion frames which has many advantages, according to the manufacturer. The Adamstop, as it is called, assures complete protection at all points; greater production; better quality; no doublings; instant action, and lower costs in purchase price, installation and maintenance.

The Adamstop causes a red light to flash when a frame stops, thus permitting immediate attention. Many mills have increased work assignments with use of the Adamstop, the manufacturer reports.

For further information, write the editors.

Tennessee Corp. Acquires Sodium Hydrosulfite Plant

Tennessee Corporation recently announced the purchase by its subsidiary, Tennessee Copper Company, of the Sodium Hydrosulfite, Sulfoxalate and Zinc Oxide manufacturing facilities of the Esmond Chemical Company, Esmond, R. I.

It is planned to move this equipment to Copperhill, Tennessee where Tennessee Copper Company operates its mines and several large chemical plants. The location of the new plant at Copperhill will provide a source of these important chemicals close to immediate consuming areas. Major industries to be served from this plant include, textile, clay, rayon and rubber processing plants. The move will be made in such manner as to afford continuous service to Esmond's present customers.

Tennessee Copper Company which ranks among the larger producers of liquid sulfur dioxide also recovers zinc from its ores. Both of these are important raw materials used in the manufacture of Sodium Hydrosulfite and other products of the Esmond plant.

Drives *(Concluded from Page 95)*

at a time when basic raw material and labor costs are steadily increasing, the manufacturers and finishers of textile materials must, of necessity, seek new and more efficient manufacturing processes. They must turn to the advantages produced through automation for greater production of high quality goods at lower costs.

Business Service Section

Exclusively for Business, Laboratory and Mill Services; Positions and Men Wanted; Business Opportunities; Mill Properties Wanted or For Sale; Reconditioned Machinery and Equipment, etc.

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2 columns to the page, each column 8 inches deep

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3 Inches	22.50
4 Inches	28.00
5 Inches	35.00
6 Inches	42.00
7 Inches	49.00
8 Inches	52.00

Calendar of Coming Events

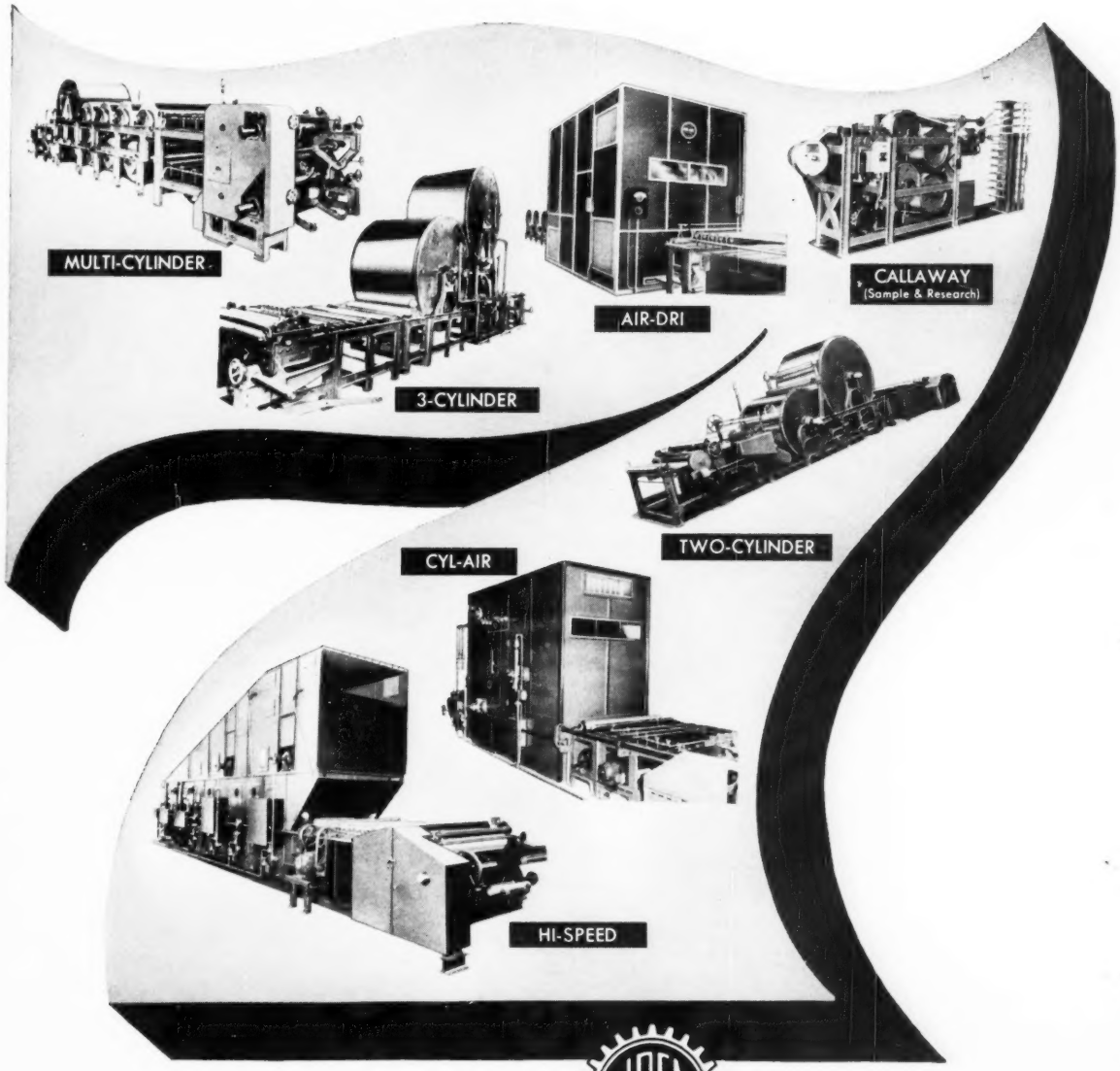
FEB. 5-8—NWDGA 29th annual convention. Hotel Statler, New York, N. Y.
FEB. 13-15—Annual convention Textile Division, American Society for Quality Control. Institute of Textile Technology, Charlottesville, Va.
FEB. 15-17—Seventh Annual Cotton Research Clinic, National Cotton Council, Pinehurst, N. C.
FEB. 18—Open house Tomokins Textile Council. School of Textiles, N. C. State College.
FEB. 24—AATCC New York Section, Hotel Delmonico, New York, N. Y.
FEB. 27-MAR. 2—ASTM Committee Week, Hotel Statler, Buffalo, N. Y.
MAR. 7—AATT meeting, Builders Club, New York, N. Y.
MAR. 13-16—ASTM, Committee D-13 spring meeting, Hotel Warwick, New York, N. Y.
MAR. 15-16—5th annual spring conference American Institute Industrial Engineers (Cleveland Chapter).
MAR. 15-17—Annual meeting Am. Physical Society, Pittsburgh, Pa.
MAR. 22-23—Annual convention Southern Textile Methods and Standards Association. Clemson, S. C.
MAR. 22-23—Annual meeting Textile Research Institute, Hotel Commodore, New York, N. Y.
APR. 5-7—Convention American Cotton Manufacturers Institute. Hollywood Beach, Fla.
APR. 9-12—National Packaging Exposition. Auditorium, Atlantic City, N. J.
APR. 18-19—National Knitted Outerwear Association. Waldorf-Astoria Hotel, New York, N. Y.

Index to Advertisers

(*See previous or subsequent issues)

BUSINESS SERVICE

ONLY WEST POINT *makes all*



SLASHERS

Only West Point can make an impartial recommendation, because only West Point makes both cylinder and hot air slashers. Whether for the lightest gauze or the heaviest sheeting . . . for natural or synthetic fibers . . . for samples or research . . . West Point can furnish the right slasher.

WEST POINT FOUNDRY & MACHINE COMPANY
WEST POINT, GEORGIA

ALSIMAG® Guides have the RIGHT COMPOSITION FOR EACH JOB!

Including new, harder AlSiMag Aluminas

LONGER LIFE. For years AlSiMag guides in various materials have set long life records. Hard. Homogeneous. Highly resistant to wear.

MORE MATERIALS. AlSiMag 192 and 193 are regarded as industry standards — answer most guide requirements for producing and processing synthetic fibers. Have solved more guide problems than any other compositions. However, for top performance, some guide applications need special material characteristics, including finishes not readily changed by usage. For especially severe conditions, AlSiMag has developed a family of Alumina ceramics . . . hardest and most durable yet! AlSiMag 491, 513 and the new 614 provide a complete range of desirable traits for such exacting requirements.

VOLUME PRODUCTION. Demand has multiplied for every type AlSiMag guide. Accelerated output keeps pace. The finest production facilities operate around-the-clock, including huge, high-temperature, continuous-fire kilns which help achieve the **superior physical, dimensional** and **finish** characteristics of AlSiMag guides. A sizable plant section is now devoted exclusively to processing and firing AlsSiMag Aluminas.

AlSiMag's wider range of versatile materials permits selection of the **right** composition for every guide application! Over half a century's "know how" devoted to each order.

1. AlSiMag 192, cream colored, standard of the industry. ***2***. AlSiMag 193, metallic gray, a conductor of electricity. ***3***. Typical AlSiMag 491 Alumina guides, blue in color, which enjoy such an industry wide reputation for wear resistance. ***4***. Guides in AlSiMag 513, an extremely hard pink material developed for slightly different applications. ***5***. Guides in new AlSiMag 614, a white material — the hardest yet produced.

To meet — and usually exceed — the most exacting requirements, use AlSiMag guides. Complete information and samples on request.

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